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OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

November 21, 1978

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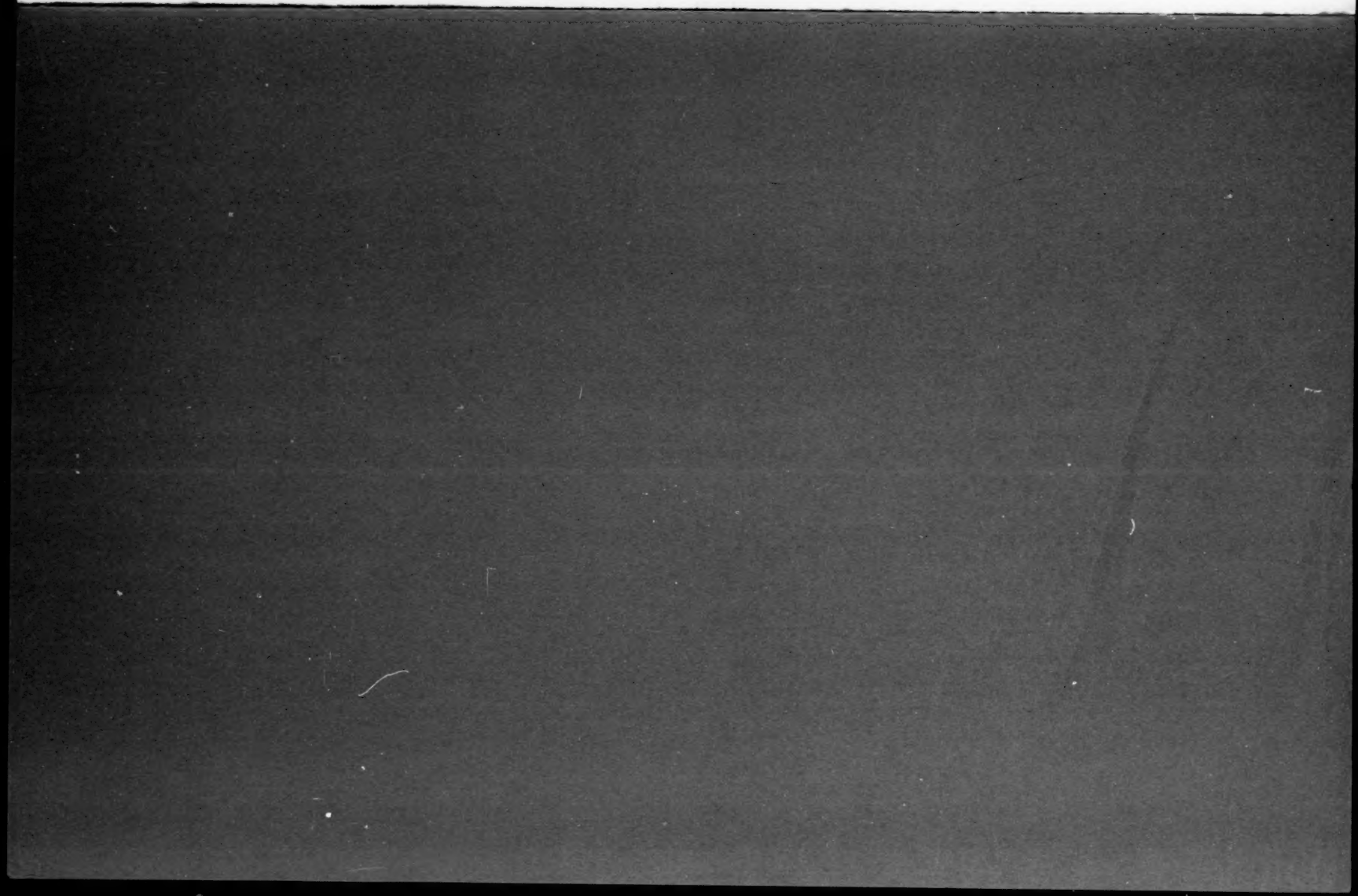

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) Implementation: Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of May 16, 1978.

LUTRELLE F. PARKER,
May 2, 1978. *Acting Commissioner of Patents and Trademarks.*

Handling of Dependent Claims by the Examiner

Effective immediately, the following practice will be followed by patent examiners when making reference to a dependent claim—either singular or multiple. The new practice is intended to simplify and streamline our current practice (MPEP 608.01(n), Revision 55, January 1978) which experience indicates was unnecessarily burdensome in many cases.

1. When identifying a singular dependent claim which does not include a reference to a multiple dependent claim, either directly or indirectly, reference should be made only to the number of the dependent claim.
2. When identifying the embodiments included within a multiple dependent claim, or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, each embodiment should be identified by using the number of the claims involved, starting with the highest, *to the extent necessary* to specifically identify each embodiment.
3. When all embodiments included within a multiple dependent claim or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, are subject to a common rejection, objection or requirement, reference may be made only to the number of the dependent claim.

The following table illustrates the intended differences between current and the revised practice where each embodiment of each claim must be treated on an individual basis:

Claim Number	Claim Dependency	Identification	
		Current Practice	Revised Practice
1	Independent	1	1
2	Depends from 1	2/1	2
3	Depends from 2	3/2/1	3
4	Depends from 2 or 3	4/2/1	4/2
		4/3/2/1	4/3
5	Depends from 3	5/3/2/1	5
6	Depends from 2, 3 or 5	6/2/1	6/2
		6/3/2/1	6/3
		6/5/3/2/1	6/5
7	Depends from 6	7/6/2/1	7/6/2
		7/6/3/2/1	7/6/3
		7/6/5/3/2/1	7/6/5

When all embodiments in a multiple dependent claim situation (claims 4, 6 and 7 above) are subject to a common rejection, objection or requirement, reference may be made only to the number of the individual dependent claim. For example, if 4/2 and 4/3 were subject to a common ground of rejection, reference should be made only to claim 4 in the statement of that rejection.

The provisions of 35 USC 132 require that each Office action make it explicitly clear what rejection, objection and/or requirement is applied to each claim embodiment.

WILLIAM FELDMAN,
Oct. 17, 1978. *Deputy Assistant Commissioner.*

Revised Practice re Markush-Type Claims

This notice deals with Markush-type generic claims which include a plurality of alternatively usable substances or members. In most cases, a recitation by enumeration is used because there is no appropriate or true generic language. In many cases, the Markush-type claims include independent and distinct inventions. This is true where two or more of the members are so unrelated and diverse that a prior art reference anticipating the claim with respect to one of the members would not render the claim obvious under 35 U.S.C. 103 with respect to the other member(s).

In applications containing claims of that nature, the Examiner may require a provisional election of a single species prior to examination on the merits. The provisional election will be given effect in the event that the Markush-type claim should be found not allowable. Following election, the Markush-type claim will be examined fully with respect to the elected species and further to the extent necessary to determine patentability. Should the Markush-type claim be found not allowable, examination will be limited to the Markush-type claim and claims to the elected species, with claims drawn to species patentably distinct from the elected species held withdrawn from further consideration.

As an example, in the case of an application with a Markush-type claim drawn to the compound C-R, wherein R is a radical selected from the group consisting of A, B, C, D, and E, the Examiner may require a provisional election of a single species, CA, CB, CC, CD, or CE. The Markush-type claim would then be examined fully with respect to the elected species and any species considered to be clearly unpatentable over the elected species. If on examination the elected species is found to be anticipated or rendered obvious by prior art, the Markush-type claim and claims to the elected species shall be rejected, and claims to the non-elected species would be held withdrawn from further consideration. As in the prevailing practice, a second action on the rejected claims would be made final.

On the other hand, should no prior art be found that anticipates or renders obvious the elected species, the search of the Markush-type claim will be extended. If prior art is then found that anticipates or renders obvious the Markush-type claim with respect to a *non-elected species*, the Markush-type claim shall be rejected and claims to the non-elected species held withdrawn from further consideration. The prior art search, however, will not be extended unnecessarily to cover all non-elected species. Should applicant, in response to this rejection of the Markush-type claim, overcome the rejection, as by amending the Markush-type claim to exclude the species anticipated or rendered obvious by the prior art, the amended Markush-type claim will be re-examined. The prior art search will be extended to the extent necessary to determine patentability of the Markush-type claim. In the event prior art is found during the re-examination that anticipates or renders obvious the amended Markush-type claim, the claim will be rejected and the action made final. Amendments submitted after the final rejection further restricting the scope of the claim will not be entered.

If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the Examiner is encouraged to examine all claims on the merits, even though they are directed to independent and distinct inventions. In such a case, the Examiner will not follow the above procedure and will not require restriction.

This notice supersedes the practice set out in 922 O.G. 1016, dated May 1, 1974.

Although the above practice is now in effect, a rule change proposal is also being considered to provide for prosecution of multiple inventions in a single patent application by submission of additional fees.

DONALD W. BANNER,
Oct. 23, 1978. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,705,100, Re. S.N. 940,969, Filed Sep. 11, 1978, Cl. 210/23, BLOOD FRACTIONATING PROCESS AND APPARATUS FOR CARRYING OUT SAME, William F. Blatt, et al., Owner of Record: *Amicon Corp., Lexington, Mass.*, Attorney or Agent: Edgar H. Kent, Ex. Gp.: 176

3,911,096, Re. S.N. 932,759, Filed Aug. 10, 1978, Cl. 424/1, RADIOIMMUNOASSAY FOR MEASUREMENT OF THYROXINE (T_4) AND TRIIODOTHYRONINE (T_3) IN BLOOD SERUM, Inder J. Chopra, Owner of Record: *The Attending Staff Association of the Los Angeles County Harbor General Hospital, Torrance, Calif.*, Attorney or Agent: I. Morley Drucker, Ex. Gp.: 223

3,916,118, Re. S.N. 943,343, Filed Sep. 15, 1978, Cl. 179/99, STATION LOOP CONTROL ARRANGEMENT FOR TELEPHONE SWITCHING SYSTEM, John Francis O'Neill, Owner of Record: *Bell Telephone Laboratories Inc., Murray Hill, N.J.*, Attorney or Agent: W. L. Keefauver, et al., Ex. Gp.: 232

3,928,416, Re. S.N. 939,291, Filed Sep. 1, 1978, Cl. 560/21, HERBICIDAL 4-TRIFLUOROMETHYL-4'-NITRODIPHENYL ETHERS, Horst O. Bayer, et al., Owner of Record: *Rohm and Haas Company, Philadelphia, Pa.*, Attorney or Agent: William E. Lambert, III, Ex. Gp.: 126

3,939,282, Re. S.N. 944,048, Filed Sep. 18, 1978, Cl. 426/603, FOOD PRODUCTS, Norman John Carlile, et al., Owner of Record: *Lever Brothers Company, New York, N.Y.*, Attorney or Agent: Melvin H. Kurtz, et al., Ex. Gp.: 172

3,978,409, Re. S.N. 937,625, Filed Aug. 28, 1978, Cl. 325/62, SIGNAL COMPRESSORS AND EXPANDERS, Ray Milton Dolby, et al., Owner of Record: *Inventor,* Attorney or Agent: Karl A. Limbach, et al., Ex. Gp.: 233

3,980,136, Re. S.N. 942,898, Filed Sep. 12, 1978, Cl. 166/280, FRACTURING WELL FORMATIONS USING FOAM, Ray A. Plummer, et al., Owner of Record: *Big Three Industries Inc., Houston, Tex.*, Attorney or Agent: Kenneth E. Knuffner, et al., Ex. Gp.: 354

4,063,929, Re. S.N. 939,292, Filed Sep. 1, 1978, Cl. 71/115, HERBICIDAL 4-TRIFLUOROMETHYL-4'-NITRODIPHENYL ETHERS, Horst O. Bayer, et al., Owner of Record: *Rohm and Haas Company, Philadelphia, Pa.*, Attorney or Agent: William E. Lambert, III, Ex. Gp.: 124

PATENT NOTICES

Certificates of Correction for the Week of Nov. 21, 1978

Re. 29,646	4,059,850	4,081,776	4,090,586
3,703,997	4,060,708	4,081,783	4,090,971
3,736,157	4,061,649	4,082,191	4,090,977
3,742,182	4,061,954	4,082,210	4,091,001
3,801,785	4,064,490	4,082,560	4,091,156
3,850,840	4,064,521	4,082,685	4,091,227
3,872,430	4,064,561	4,082,705	4,091,725
3,878,477	4,065,776	4,082,780	4,091,730
3,887,433	4,066,771	4,083,244	4,091,791
3,924,788	4,066,816	4,083,407	4,091,816
3,925,973	4,067,879	4,083,873	4,091,972
3,928,764	4,068,574	4,084,202	4,091,983
3,969,601	4,069,264	4,084,205	4,092,043
3,975,842	4,069,910	4,084,322	4,092,142
3,996,495	4,071,079	4,084,642	4,092,191
3,996,595	4,072,350	4,084,927	4,092,603
4,003,976	4,072,565	4,086,726	4,092,630
4,009,205	4,072,912	4,086,918	4,092,638
4,016,302	4,072,983	4,087,103	4,092,679
4,017,631	4,074,230	4,087,147	4,092,804
4,031,226	4,075,092	4,087,258	4,092,951
4,035,344	4,075,341	4,087,363	4,093,086
4,044,252	4,076,212	4,087,403	4,093,363
4,044,443	4,076,751	4,087,617	4,093,557
4,047,982	4,076,840	4,087,633	4,093,728
4,052,643	4,076,935	4,087,806	4,093,814
4,053,225	4,077,130	4,087,887	4,093,848
4,053,545	4,077,298	4,088,246	4,094,059
4,054,557	4,077,934	4,088,510	4,094,163
4,055,061	4,077,958	4,088,941	4,094,220
4,055,268	4,078,118	4,088,996	4,094,281
4,055,481	4,078,161	4,089,118	4,094,379
4,056,489	4,079,210	4,089,184	4,094,399
4,058,694	4,079,600	4,089,222	4,094,493
4,058,962	4,079,903	4,089,275	4,094,704
4,059,077	4,080,062	4,089,375	4,095,693
4,059,259	4,080,064	4,089,579	4,096,105
4,059,277	4,080,243	4,089,759	4,096,300
4,059,437	4,080,324	4,089,788	4,096,448
4,059,615	4,080,398	4,089,880	4,096,513
4,059,655	4,080,435	4,089,953	4,096,688
4,059,743	4,081,581	4,090,204	4,097,775

Patents Available for Licensing or Sale

4,071,004. ELECTRO-STATIC FUEL MIXTURE SYSTEM. Neil Ostergaard, 1454 East Gateway Circle, Apt. 12, Fargo, N. Dak. 58103.

The General Electric Company is prepared to grant non-exclusive licenses under the following patents upon reasonable terms and domestic manufacturers.

Application for license may be addressed to the General Electric Company, Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

4,003,388. HAIR DRYER VARIABLE CONTROL.
4,088,869. DRYER TEMPERATURE LIMITER.
D. 243,041. DESIGN FOR A LOOKING GLASS OR SIMILAR ARTICLE.

Applications for license may be addressed to General Electric Company, Re-Entry and Environmental Systems Division, 3198 Chestnut St., Philadelphia, Pa. 19101.

4,092,263. METAL VAPOR GENERATOR.

Applications for license may be addressed to Division Patent Counsel, Switchgear & Distribution Transformer Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa. 19142.

3,812,314. HIGHPOWER ELECTRICAL BUSHING HAVING A VACUUM SWITCH ENCAPSULATED THEREIN.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half Street, SW, Washington, D.C. 20324

Patent application 887,910. Long Time Constant Clutter Tracker for Radar System. Filed Mar. 17, 1978.

Patent application 888,797. Hot Wall Trunnion With Pressure Seal. Filed Mar. 21, 1978.

Patent application 891,800. Gas Bearing Surface Coating. Filed Mar. 30, 1978.

Patent application 891,873. Electrically Conductive Bonding Strap for Connecting Movable Parts. Filed Mar. 30, 1978.

Patent application 891,876. Portable Optical Fiber Coupling Device. Filed Mar. 30, 1978.

Patent application 893,868. Method and Apparatus for Adjusting and Locking a Linear Actuator. Filed Apr. 6, 1978.

Patent application 893,869. Digital Eddy Current Inspection System. Filed Apr. 6, 1978.

Patent application 896,832. Launch Lug Retractor Assembly. Filed Apr. 17, 1978.

Patent application 896,859. Gas Flow Control System for a Turboshaft Engine. Filed Apr. 17, 1978.

Patent application 896,861. Improved Carbon/Carbon Composite for Re-Entry Vehicle Applications. Filed Apr. 17, 1978.

Patent application 898,048. Shift Mechanism for Aircraft Control System. Filed Apr. 20, 1978.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements & Patent Branch, General Services Division, Federal Bldg. Agricultural Research Service, Hyattsville, Md. 20782

Patent 4,071,501. Water Soluble Adduct of Hydroxymethyl Phosphorous Compound and Ammonia or Amine Compound and Method of Preparation. Filed Jan. 14, 1976. Patented Jan. 31, 1978. Not available NTIS.

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
5285 Port Royal Road, Springfield, Va. 22161

Patent application 897,818. Differential Doppler Velocity Sensor. Filed Apr. 19, 1978.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 3,969,209. Automatic Electrochemical Ambient Air Monitor for Chloride and Chlorine. Filed July 8, 1975. Patented July 13, 1976. Not available NTIS.

Patent 4,032,407. Tapered Bed Bioreactor. Filed Feb. 24, 1976. Patented June 28, 1977. Not available NTIS.

Patent 4,043,936. Biological Denitrification of High Concentration Nitrate Waste. Filed Feb. 24, 1976. Patented Aug. 23, 1977. Not available NTIS.

Patent 4,046,593. Method for Collecting Spores From a Mold. Filed June 17, 1976. Patented Sept. 6, 1977. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, & WELFARE
National Institutes of Health, Chief, Patent Branch, Westwood Building, Bethesda, Md. 20014

Patent application 866,907. Anticancer and Antiviral Activity of 9-B-D-Arabinofuranosyl-2-Fluoroadenine. Filed Jan. 4, 1978.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18 and C Streets, NW., Washington, D.C. 20240

Patent application 884,324. Process for the Preparation of Rare-Earth/Silicon Alloys. Filed Mar. 7, 1978.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents Office of Naval Research—Code 302, Arlington, Va. 22217

Patent application 868,157. Time Delay Computer Using Fuze Doppler for Air-To-Air Missiles. Filed Jan. 9, 1978.

Patent application 890,099. Attitude Selective Aircrew Escape Control. Filed Mar. 27, 1978.

Patent application 892,054. Microwave Radiometric Attitude Reference System. Filed Mar. 21, 1978.

Patent application 896,062. Multimode Electrooptic Waveguide Switch. Filed Apr. 13, 1978.

Patent application 897,237. Method and Apparatus for Measuring Adhesion of Particulate Materials. Filed Apr. 17, 1978.

Patent application 899,194. Elevation Sampling Terrain Probe. Filed Apr. 24, 1978.

Patent application 899,935. Multi-Refractory Films for Gallium Arsenide Devices. Filed Apr. 25, 1978.

Patent 3,994,752. Annealing Treatment for Controlling Warhead Fragmentation Size Distribution. Filed Oct. 23, 1973. Patented Nov. 30, 1976. Not available NTIS.

Patent 4,018,676. Removal of Explosive Materials From Water by Chemical Interaction on Strongly Basic Ion Exchange Resins. Filed Jan. 15, 1976. Patented Apr. 19, 1977. Not available NTIS.

Patent 4,028,701. Quasi-Corner Reflectors for Electromagnetic Radiation. Filed Apr. 5, 1976. Patented June 7, 1977. Not available NTIS.

Patent 4,032,919. Device for Secant Correction of Azimuth Data in Tracking Radars. Filed Aug. 11, 1976. Patented June 28, 1977. Not available NTIS.

Patent 4,044,599. Test System for Evaluation of Armors Using Duplicate Fragments. Filed Mar. 1, 1976. Patented Aug. 30, 1977. Not available NTIS.

Patent 4,051,414. Missile Adaptation Kit Assembly. Filed Dec. 28, 1964. Patented Sept. 27, 1977. Not available NTIS.

Patent 4,058,275. Low Frequency Passive Guidance Method. Filed Dec. 28, 1970. Patented Nov. 15, 1977. Not available NTIS.

Patent 4,062,709. Inhibited Fluorcarbon Rocket Propellant. Filed Sept. 25, 1968. Patented Dec. 13, 1977. Not available NTIS.

Patent 4,067,013. Automatic Thresholding and Reference Circuit. Filed Nov. 12, 1976. Patented Jan. 3, 1978. Not available NTIS.

Patent 4,070,573. Wide Angle Laser Seeker. Filed Oct. 21, 1976. Patented Jan. 24, 1978. Not available NTIS.

Patent 4,073,985. Composite Dome. Filed July 14, 1976. Patented Feb. 14, 1978. Not available NTIS.

Patent 4,074,628. FAX Canister With a Bottom Burster Charge and Dispersion Control Ring. Filed June 21, 1966. Patented Feb. 21, 1978. Not available NTIS.

Patent 4,076,772. Large, Nonplanar Poly (Methyl Methacrylate) Pre-Holographic Element. Filed Mar. 29, 1976. Patented Feb. 28, 1978. Not available NTIS.

Patent 4,078,495. Control After Burnout for Reaction Steered Missiles. Filed Aug. 15, 1974. Patented Mar 14, 1978. Not available NTIS.

Patent 4,079,082. Lasing Dyes Derived From Ter-and Quaterphenyl. Filed Apr. 28, 1975. Patented Mar. 14, 1978. Not available NTIS.

Patent 4,081,784. Omnidirectional Monitor Buoy. Filed Oct. 1, 1976. Patented Mar. 28, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE ARMY
Office of the Judge Advocate General Patent Division/Room 2C–455, Pentagon Washington, D.C. 20314

Patent 4,050,009. Spectrometer for External Detection of Magnetic and Related Double Resonance. Filed Jan. 9, 1976. Patented Sept. 20, 1977. Not available NTIS.

Patent 4,050,494. Anti-Rotation Lock for Fastener Bolt. Filed June 18, 1976 Patented Sept. 27, 1977. Not available NTIS.

Patent 4,051,405. Method for Controlling Low-Energy High-Current Density Electron Beams. Filed Sept. 10, 1975. Patented Sept. 27, 1977. Not available NTIS.

Patent 4,051,449. Time Frequency Diversity System. Filed Oct. 12, 1976. Patented Sept. 27, 1977. Not available NTIS.

Patent 4,051,465. Ferroelectric Ceramic Devices. Filed Dec. 16, 1974. Patented Sept. 27, 1977. Not available NTIS.

Patent 4,051,475. Radio Receiver Isolation System. Filed July 21, 1976. Patented Sept. 27, 1977. Not available NTIS.

Patent 4,051,480. Conformal Edge-Slot Radiators. Filed Oct. 27, 1976. Patented Sept. 27, 1977. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half Street, SW., Washington, D.C. 20324

Patent application 816,223. Procedure for Removing Aluminum From an Al–Al3Ni Two-Phase Matrix. Filed July 15, 1977.

Patent application 882,525. Single Axis Resonator for Laser. Filed Mar. 1, 1978.

Patent application 882,527. Grease Compositions. Filed Mar. 1, 1978.

Patent application 884,881. A Method for the Deagglomeration of Aluminum Powder. Filed Mar. 9, 1978.

Patent application 884,882. High Power Hybrid Switch. Filed Mar 9, 1978.

Patent application 886,307. Method of Evaluating Magnetic Fields in Parts During Magnetic Particle Inspection. Filed Mar. 13, 1978.

Patent application 888,810. Tunable Bandpass Ring Filter. Filed Mar. 21, 1978.

Patent application 888,812. A Correction System for Photomultiplier Tube Nonlinearity. Filed Mar. 21, 1978.

Patent application 888,813. Fluorine Generator for Chemical Lasers. Filed Mar. 21, 1978

Patent application 889,468. Cylinder Support Assembly. Filed Mar. 23, 1978.

Patent application 889,469. Amplifier-Oscillator Frequency Multiplier Apparatus. Filed Mar. 23, 1978.

Patent application 889,795. Single Blade Proximity Probe. Filed Mar. 23, 1978.

Patent application 891,798. Interface Shear Transducer. Filed Mar. 30, 1978.

Patent application 891,878. Dual Connector for Coupling Coaxial Circuits to Overlay Stripline Circuits. Filed Mar. 30, 1978.

Patent application 896,831. Digital Level Detector Apparatus. Filed Apr. 17, 1978.

Patent application 898,047. Automatic Bias Adjustment Circuit for a Successive Ranged Analog/Digital Converter. Filed Apr. 20, 1978.

Patent application 898,049. Multiple Shock Aerodynamic Window. Filed Apr. 20, 1978.

Patent application 898,069. Ejector Ramjet With Turbojet Fuel Rich Gas Generator. Filed Apr. 20, 1978.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements & Patent Branch, General Services Division, Federal Bldg. Agricultural Research Service, Hyattsville, Md. 20782

Patent application 798,723. Solar Heated and Cooled Dwelling. Filed May 19, 1977.

Patent application 880,832. Cross-Protective Fowl Cholera Bacterins. Filed Feb. 24, 1978.

Patent application 882,003. Catching Surface Seal and Rotating Trunk Seal for a Continuous Tree Crop Harvester. Filed Feb. 28, 1978.

Patent application 891,955. Method of Increasing the Yield of Hydrocarbons From Plants. Filed Mar. 31, 1978.

Patent application 908,601. Production of High-Pyruvate Xanthan Gum on Synthetic Medium. Filed May 23, 1978.

Patent 4,082,814. Growth Inhibitors for Mosquito Larvae. Filed Apr. 27, 1976. Patented Apr. 4, 1978. Not available NTIS.

Patent 4,083,816. Acetoxymethyl Derivatives of Polyunsaturated Fatty Triglycerides as Primary Plasticizers for Polyvinylchloride. Filed June 25, 1976. Patented Apr. 11, 1978. Not available NTIS.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents Washington, D.C. 20545

Patent 4,007,729. Means of Increasing Efficiency of CPC Solar Energy Collector. Filed June 27, 1975. Patented Feb. 15, 1977. Not available NTIS.

Patent 4,030,834. Dynamic Multistation Photometer. Filed Apr. 8, 1976. Patented June 21, 1977. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, & WELFARE
National Institutes of Health, Chief, Patent Branch, Westwood Building, Bethesda, Md. 20014

Patent application 775,800. Nucleic Acid Crosslinking Agent and Affinity Inactivation of Nucleic Acids Therewith. Filed Mar. 9, 1977.

Patent application 880,425. Flask and Apparatus for Producing High-Purity Water. Filed Mar. 29, 1976.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents Office of Naval Research—Code 302, Arlington, Va. 22217

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Patent application 818,787. An Ultrafast Scanning Spectrophotometer. Filed July 25, 1977.

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Patent application 846,231. Material Scanning Apparatus. Filed Oct. 27, 1977.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters NASA Code GP–2 Washington, D.C. 20546

Patent 4,084,132. Swept Group Delay Measurement. Filed Nov. 24, 1976. Patented Apr. 11, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half Street, SW., Washington, D.C. 20324

Patent 4,079,595. Fusible Heat Sink for a Cryogenic Refrigerator. Filed Jan. 12, 1977. Patented Mar. 21, 1978. Not available NTIS.

Patent 4,081,136. Dual Manifold High Performance Throttleable Injector. Filed Jan. 21, 1977. Patented Mar. 28, 1978. Not available NTIS.

Patent 4,081,137. Finned Surface Cooled Nozzle. Filed Jan. 5, 1977. Patented Mar. 28, 1978. Not available NTIS.

Patent 4,081,157. Aircraft Conveyor Load Redistribution System. Filed Apr. 11, 1977. Patented Mar. 28, 1978. Not available NTIS.

Patent 4,081,177. Break-Away Outrigger. Filed Mar 10, 1977. Patented Mar. 28, 1978. Not available NTIS.

Patent 4,081,744. Resistance Bridge Transducer Conditioning Circuit. Filed Nov. 10, 1976. Patented Mar. 28, 1978. Not available NTIS.

Patent 4,081,785. Dual Class Amphibious Target Discriminator. Filed Feb. 13, 1974. Patented Mar. 28, 1978. Not available NTIS.

Patent 4,085,444. Random Action Event Switching Method and Apparatus for a Multiple Input Data Processing System. Filed Apr. 21, 1976. Patented Apr. 18, 1978. Not available NTIS.

Patent 4,085,582. Wall and Nozzle Assembly for Colloidal Core Reactor. Filed Nov. 4, 1976. Patented Apr. 25, 1978. Not available NTIS.

Patent 4,085,584. Barrier System for Dual-Pulse Rocket Motor. Filed Nov. 5, 1976. Patented Apr. 25, 1978. Not available NTIS.

Patent 4,085,678. Kinetic Energy, Impact-Separated, Follow-Through Ungula Penetrator. Filed Apr. 25, 1977. Patented Apr. 25, 1978. Not available NTIS.

Patent 4,085,679. Fuze for Explosive Magnetohydrodynamic Generator. Filed Dec. 23, 1976. Patented Apr. 25, 1978. Not available NTIS.

Patent 4,086,590. Method and Apparatus for Improving the Slowly Moving Target Detection Capability of an AMTI Synthetic Aperture Radar. Filed Jan. 21, 1977. Patented Apr. 25, 1978. Not available NTIS.

Patent 4,086,657. Five-Stage Four-Bit Complex Multiplier. Filed Aug. 18, 1976. Patented Apr. 25, 1978. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Research Agreements & Patent Branch, General Services Division, Federal Bldg., Agricultural Research Service, Hyattsville, Md. 20782

Patent application 869,891. Process for Increasing Oleoresin Synthesis in Pinus Species. Filed Jan. 16, 1978.

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U.S. DEPARTMENT OF COMMERCE

National Technical Information Service
5285 Port Royal Road, Springfield, Va. 22161

Patent application 848,041. High Speed, Wide Dynamic Range Analog-to-Digital Conversion. Filed Nov. 3, 1977.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 738,982. Ultrasonic Technique for Characterizing Skin Burns. Filed Nov. 4, 1976.

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Patent application 763,166. Multiple-Image Oscilloscope Camera. Filed Jan. 27, 1977.

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Patent 3,979,295. Folded Membrane Dialyzer With Mechanically Sealed Edges. Filed Apr. 9, 1975. Patented Sept. 7, 1976. Not available NTIS.

Patent 3,983,007. System for Sampling and Monitoring Microscopic Organisms and Substances. Filed Sept. 23, 1975. Patented Sept. 28, 1976. Not available NTIS.

Patent 4,016,290. Method of Encapsulating Polyaminopolycarboxylic Acid Chelating Agents in Liposomes. Filed Nov. 10, 1975. Patented Apr. 5, 1977. Not available NTIS.

Patent 4,016,886. Method for Localizing Heating in Tumor Tissue. Filed Nov. 26, 1974. Patented Apr. 12, 1977. Not available NTIS.

Patent 4,019,079. Gas Injected Vacuum Switch. Filed May 7, 1976. Patented Apr. 19, 1977. Not available NTIS.

Patent 4,027,165. Ionization Detection System for Aerosols. Filed Feb. 17, 1976. Patented May 31, 1977. Not available NTIS.

Patent 4,027,239. Current Level Detector. Filed Nov. 25, 1975. Patented May 31, 1977. Not available NTIS.

Patent 4,048,325. Low Toxicity Method of Inhibiting Sickling of Sickle Erythrocytes. Filed Jan. 5, 1976. Patented Sept. 13, 1977. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents Office of Naval Research—Code 302, Arlington, Va. 22217

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Patent application 877,200. Pressure Biased Shuttle Valve. Filed Feb. 13, 1978.

Patent application 878,556. Ship Escape and Survival System. Filed Feb. 17, 1978.

Patent application 882,724. Vertically Integrated Circuits. Filed Mar. 2, 1978.

Patent application 883,430. Method for Determining Antenna Near-Fields From Measurements on a Spherical Surface. Filed Mar. 3, 1978.

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Patent 3,877,287. Low Flow Gas or Liquid Calibrator. Filed Aug. 9, 1973. Patented Apr. 15, 1975. Not available NTIS.

Patent 4,050,070. Programmable Microwave Modulator. Filed June 1, 1976. Patented Sept. 20, 1977. Not available NTIS.

Patent 4,053,680. Process for Bonding Polymers. Filed Dec. 4, 1975. Patented Oct. 11, 1977. Not available NTIS.

Patent 4,056,746. Counterrotation Electric Motor. Filed Oct. 20, 1975. Patented Nov. 1, 1977. Not available NTIS.

Patent 4,066,833. 2,3,7,8-Tetraazaspiro (4.4)Nonane, 2,3,7,8-Tetraazaspiro-(4.4)Nona-2,7-diene and Derivatives. Filed Nov. 22, 1976. Patented Jan. 3, 1978. Not available NTIS.

Patent 4,070,094. Optical Waveguide Interferometer Modulator-Switch. Filed Aug. 25, 1975. Patented Jan 24, 1978. Not available NTIS.

Patent 4,070,101. Narrowband Wide Field of View Optical Filter. Filed Sept. 2, 1976. Patented Jan. 24, 1978. Not available NTIS.

Patent 4,072,956. Multifrequency Array Using Common Phasors. Filed May 17, 1976. Patented Feb. 7, 1978. Not available NTIS.

Patent 4,073,010. Correlation Methods and Apparatus Utilizing Mellin Transforms. Filed July 23, 1976. Patented Feb. 7, 1978. Not available NTIS.

Patent 4,074,267. Device for Numerically Displaying VOR Bearing. Filed May 17, 1976. Patented Feb. 14, 1978. Not available NTIS.

Patent 4,075,319. Low Leaching Antifouling Organometallic Polyvinyls. Filed June 24, 1976. Patented Feb. 21, 1978. Not available NTIS.

Patent 4,075,385. Anti-Reflective Coating for High Energy Optical Components. Filed Apr. 1, 1977. Patented Feb. 21, 1978. Not available NTIS.

Patent 4,075,583. Low Loss Tuneable Filter. Filed May 24, 1976. Patented Feb. 21, 1978. Not available NTIS.

Patent 4,075,608. Multiple-Channel Data Switch. Filed Jan. 19, 1976. Patented Feb. 21, 1978. Not available NTIS.

Patent 4,075,703. Recursive Filter Mean-Level Detector. Filed Nov. 1, 1976. Patented Feb. 21, 1978. Not available NTIS.

Patent 4,076,381. On Line Electro-Optic Modulator. Filed Nov. 1, 1976. Patented Feb. 28, 1978. Not available NTIS.

Patent 4,076,393. Thermal Stress-Relieving Coupling Member and Support. Filed Dec. 15, 1975. Patented Feb. 28, 1978. Not available NTIS.

Patent 4,078,186. Magnetically Tuned, Surface Acoustic Wave Device. Filed Oct. 21, 1976. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,078,214. Microwave Crossover Switch. Filed Oct. 22, 1976. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,078,217. Microwave Isolation Switch. Filed Oct. 22, 1976. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,081,251. Process to Remove Iron Sulfide From Coal to Reduce Pollution. Filed Oct. 1, 1976. Patented Mar. 28, 1978. Not available NTIS.

Patent 4,082,423. Fiber Optics Cable Strengthening Method and Means. Filed Aug. 19, 1976. Patented Apr. 4, 1978. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters NASA

Code GP-2 Washington, D.C. 20546

Patent application 860,532. Soil Activated Trap Door Dibble. Filed Dec. 14, 1977.

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State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
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	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 7, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-4-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-16-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	5-1-78
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-3-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-23-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-16-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-6-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-19-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	4-3-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-3-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-3-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	12-19-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-28-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-31-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors: Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during October 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,002,192 to 3,007,168, inclusive
Plant Patents..... Numbers 2,095 to 2,100, inclusive

REISSUES

NOVEMBER 21, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

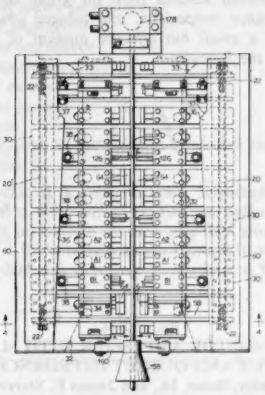
Re. 29,838
APPARATUS FOR CUTTING A CONTINUOUS ELEMENT OF INDETERMINATE LENGTH INTO PREDETERMINED LENGTHS

William Hackemann, and Charles G. Renegar, both of Shelbyville, Tenn., assignors to Hasbro Development Corp., Pawtucket, R.I.

Original No. 3,877,626, dated Apr. 15, 1975, Ser. No. 472,071, May 21, 1974. Application for reissue Apr. 12, 1977, Ser. No. 786,803

Int. Cl.[2] B65H *35/00*

U.S. Cl. 83—151 **4 Claims**



21. Apparatus for pulling and cutting an elongated element comprising a substantially rigid extrudate into predetermined lengths, the apparatus comprising a pair of endless chains transversely spaced with the top reaches of the chains lying in one plane and the bottom reaches lying in a second plane; a plurality of crossplates connected to and extending between the chains; clamping bars and cutting bars for clamping and cutting the continuous element mounted on the crossplates, the clamping bars and cutting bars each being mounted for respective clamping and cutting movement in the direction of the length of a crossplate; clamping cam means for actuating the clamping bars, each clamping bar having a cam follower at one end thereof urged against the clamping cam means by spring means, the clamping bars each having resilient gripping means at the end thereof opposite the end having the cam follower; and cutting cam means for actuating the cutting bars, each cutting bar having a cam follower at one end thereof urged against the cutting cam means by spring means and a cutting blade at the opposite end; the clamping and cutting cam means extending generally in the direction of the length of the chains in the vicinity of the top reaches of the chains, whereby clamping and cutting occur in the vicinity of the top reaches of the chains; and the clamping cam means being formed to cause the gripping means to hold and pull the substantially rigid extrudate prior to the cutting thereof by the cutting blade and to cause the cut lengths of the extrudate to be held and advanced by the gripping means after the severance of the elongated element into the cut lengths.

Re. 29,839
OPTICAL INSPECTION APPARATUS

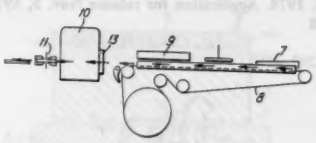
Robert W. McLoughlin, Belfast, and Colin P. Nuttall, Bangor, both of Northern Ireland, assignors to Gallaher Ltd., Belfast, Northern Ireland

Original No. 3,854,587, dated Dec. 17, 1974, Ser. No. 371,685, Jun. 20, 1973. Application for reissue Feb. 2, 1978, Ser. No. 874,520

Claims priority, application United Kingdom, Jun. 29, 1972, 30557/72

Int. Cl.[2] B07C *5/342*

U.S. Cl. 209—536 **11 Claims**



1. An optical inspection [appratus] *apparatus* for monitoring a continuously moving rod, said apparatus comprising a circular head through which said rod passes, a first set of fibre optic conductors the ends of which [terminated] *terminate* at an inner peripheral surface of said head and which transmits light from a source to said head to illuminate said rod passing therethrough, and a second set of fibre optic conductors the ends of which also terminate at said inner peripheral surface of said head to pick up light reflected from said rod passing through said head and transmit said reflected light to [a] photosensitive element[.] *means producing output signals responsive to said light,* said second set of conductors being divided into angularly spaced groups around said head and adjacent groups leading to separate photosensitive [elements] *element means, and comparator means coupled to said photosensitive element means for separately receiving the output signals of said photosensitive element means, for comparing the separate output signals of said photosensitive element means with a datum level and for providing a fault signal responsive to said comparison.*

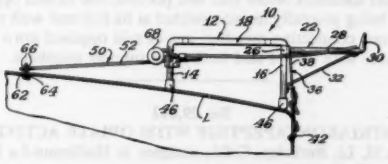
Re. 29,840
BICYCLE RACK

Steven A. Wasserman, 4920 Chase, Skokie, Ill. 60076

Original No. 3,874,575, dated Apr. 1, 1975, Ser. No. 305,349, Nov. 10, 1972. Application for reissue Mar. 23, 1977, Ser. No. 780,317

Int. Cl.[2] B60R *9/00*

U.S. Cl. 224—42.03 B **9 Claims**



1. A rack for mounting a bicycle on to a portion of an automobile with a front edge and a rear edge while discouraging theft of the bicycle and rack, said rack comprising, in combination, a rigid support member having a front portion and a rear portion, means rigidly mounted on said rear portion of said support member and projecting rearwardly therefrom for supporting at least one bicycle thereon, means for connecting

said rear portion of said support member to the rear of said automobile portion, means for interconnecting said front portion of said support member to the front of said automobile portion, said front interconnecting means including a pair of rigid interconnecting rods having means at one end thereof for interconnection to said automobile portion and having means at the other end thereof for interconnection to said support member, a pair of adjustable plate members receiving said rod members and engaging the front of said support members, flexible elongated means engaging said bicycle, and means for interlocking said flexible member to said support member for discouraging theft of said bicycle.

Re. 29,841

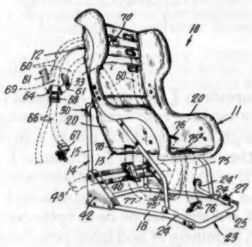
SAFETY VEHICLE SEAT STRUCTURE

Hyman Wener, Laval, Canada, assignor to Dorel Co. Ltd., Montreal North, Canada

Original No. 3,922,035, dated Nov. 25, 1975, Ser. No. 496,054, Aug. 9, 1974. Application for reissue Nov. 5, 1976, Ser. No. 739,148

Int. Cl.[2] **A47D** *1/10*

U.S. Cl. 297—250 **12 Claims**



1. A safety vehicle seat structure comprising a seat having a backrest and a seat portion, a support frame secured to said seat, said support frame comprising a pair of spaced apart vertical back support members each pivotally secured at their upper ends *to an end of a respective pivoting link, the other end of said pivoting link being pivotally secured* to a respective side of said backrest, each said vertical back support members having a lower end secured to a respective one of two horizontal support members located below said seat portion, at least one connecting member secured to said seat portion forwardly of said back support members and extending therebelow to pivotally interconnect with a displaceable lever framework whereby actuation of said lever framework will cause displacement of said seat between two positions relative to said support frame, said displaceable lever framework including a frame having opposed parallel arms and an interconnecting arm connected between said opposed arms, each said opposed parallel arms being pivotally interconnected near said interconnecting arm to a respective one of said two horizontal support members below said seat portion, one of said opposed arms being pivotally interconnected at its free end with said at least one connecting member, one of said opposed arms being lockable with one of said horizontal support members.

Re. 29,842

UNTRIAKONTAPEPTIDE WITH OPIATE ACTIVITY

Choh H. Li, Berkeley, Calif., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Original No. 4,038,222, dated Jul. 26, 1977, Ser. No. 667,747, Mar. 17, 1976. Application for reissue Aug. 8, 1977, Ser. No. 822,772

Int. Cl.[2] **C08L** *37/00;* **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 260—8 **7 Claims**

1. A compound of the formula

Boc-Tyr(oBr-Z)-Gly-Gly-Phe-Met-Thr-Ser(Bzl)-Glu(OBzl)-Lys(oBr-Z)-Ser(Bzl)-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys(oBr-Z)-Asn-Ala-Ile Ile-Lys-(oBr-Z)-Asn-Ala-His(-Boc)-Lys(oBr-Z)-Lys(oBr-X)-Gly-Gln ®

wherein oBr-Z is ortho bromobenzyloxycarbonyl; Bzl is benzyl; Boc is [toxycarbonyl] *t-butyloxycarbonyl and* ® *is styrene-divinyl-benzene copolymer resin.*

Re. 29,843

SUBSTITUTED THIAZOLES AND FLAVORING PROCESSES AND PRODUCTS PRODUCED THEREBY

Alan O. Pittet, Atlantic Highlands, and Denis E. Hruza, Bricktown, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Original No. 3,769,040, dated Oct. 30, 1973, Ser. No. 88,186, Nov. 9, 1970. Application for reissue Jun. 16, 1977, Ser. No. 807,054

Int. Cl.[2] **A23L** *1/22, 1/231;* **A24B** *3/12*

U.S. Cl. 426—535 **9 Claims**

10. A process for altering the organoleptic properties of a consumable material selected from the group consisting of a foodstuff, fragrance composition, and tobacco which comprises adding thereto a small but effective amount of at least one thiazole having the formula:

wherein R is hydrogen, alkyl or acyl; X is alkyl, alkoxy, or hydrogen; Y is alkyl, acyl, alkoxy or hydrogen; at least one of R, X and Y not being hydrogen; with the provisos (a) that X is alkyl only when either (i) R and Y are each alkyl or (ii) Y is alkoxy and (b) that when Y is methoxy, R is alkyl or X is hydrogen.

Re. 29,844

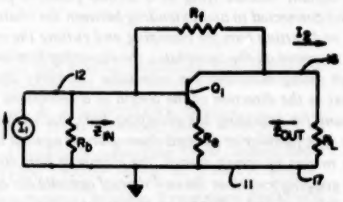
UNIT TRANSISTOR AMPLIFIER WITH MATCHED INPUT AND OUTPUT IMPEDANCES

Leonard D. Seader, Boise, Id., and James E. Sterrett, Mountain View, Calif., assignors to Avantek, Inc., Santa Clara, Calif.

Original No. 3,493,882, dated Feb. 3, 1970, Ser. No. 616,918, Feb. 17, 1967. Continuation of Ser. No. 633,961, Nov. 21, 1975, abandoned, which is a continuation of Ser. No. 223,032, Feb. 2, 1972, abandoned. Application for reissue Mar. 23, 1977, Ser. No. 780,314

Int. Cl.[2] **H03F** *1/34*

U.S. Cl. 330—293 **4 Claims**



6. An amplifier having a characteristic impedance R_o wherein the signal source impedance R_b and the load impedance R_L are substantially equal to each other and to R_o, said amplifier comprising a transistor having base, emitter and collector terminals, means for applying an input signal between the base and emitter terminals and means for deriving an output signal between the collector and emitter terminals in which there is provided shunt feedback resistance means between the output and input means and resistance means in series with the emitter current path providing series feedback, said shunt feedback resistance means and series feedback resistance means being selected to provide predeter-

mined and equal input and output impedances and a predetermined gain independent of said equal input and output impedances wherein

$$Z_{in} = R_f\left[\frac{1/R_f + 1/R_L}{1/R_e + 1/R_L}\right]$$

$$Z_{out} = R_e\left[\frac{R_f + R_b}{R_r + R_b}\right]$$

and

$$I_2/I_1 = \frac{1 - R_f/R_e}{1 + R_f/R_b + R_L(1/R_b + 1/R_e)}$$

where

R_f = *feedback resistance between collector and base of said transistor*
R_e = *resistance in series with emitter lead of said transistor*
R_b = *signal source impedance*
R_L = *load impedance*
Z_{in} = *input impedance*
Z_{out} = *output impedance*
I_1 = *input current*
I_2 = *output current*
I_2/I_1 = *gain*
in which R_f *and* R_e *are selected to provide the characteristic impedances:*

$$Z_{in} = Z_{out} = R_o = \sqrt{R_f R_e}$$

and the gain:

$$I_2/I_1 = \frac{1 - \sqrt{R_f/R_e}}{2},$$

whereby the characteristic impedance of the circuit is determined by the product of R_f *and* R_e *and the gain of the circuit is independently determined by the ratio of* R_f *and* R_e

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Re. 29,845

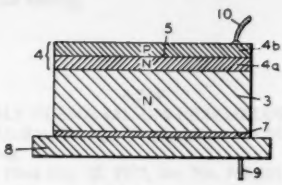
$GaAs_{1-x}P_x$ ELECTROLUMINESCENT DEVICE DOPED WITH ISOELECTRONIC IMPURITIES

Warren O. Groves; Arno H. Herzog, and Magnus G. Craford, all of St. Louis County, Mo., assignors to Monsanto Company, St. Louis, Mo.

Original No. 3,725,749, dated Apr. 3, 1973, Ser. No. 158,312, Jun. 30, 1971. Application for reissue Mar. 7, 1977, Ser. No. 775,070

Int. Cl.[2] H01L *33/00*

U.S. Cl. 357—17 **17 Claims**



1. An article of manufacture comprising an electroluminescent *vapor-grown epitaxial* material having the formula $GaAs_{1-x}P_x$, wherein x has a value within the range of [>0.2 and >1.0] *0.4 to 0.9*, containing impurity atoms of a first conductivity type and a surface region thereof containing isoelectronic impurity atoms and impurity atoms of conductivity type opposite to that of said first type to define a P-N junction in said material *and means for making ohmic contact to opposite sides of said P-N junction.*

PLANT PATENTS

GRANTED NOVEMBER 21, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,332
ROSE PLANT—CAMARA

Georges A. Delbard, Paris, France, assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Dec. 12, 1977, Ser. No. 859,450
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct cultivar of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous upright plant, and its flower color of Signal Red to Blood Red with distinct darker veins and darker, almost black, shadings.

4,333
LILY PLANT: LILIUM JULIANA

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Sandy, Oreg.

Filed Dec. 27, 1977, Ser. No. 865,012
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its compact inflorescence of flowers of excellent form, with exceptionally thick and broad tepals; by the exceptional longevity of its flowers, both on the plant and as cut flowers; by its strong stem and abundant, dark green foliage; by its rapid propagation characteristics; its superb disease resistance; its high tolerance to virus; and its suitability for use both as a garden flower and as a cut flower produced by forcing precooled bulbs; and in particular by its clear, creamy-white color, which is unique in the hybrid Asiatic division of upright lilies suited for forcing.

4,334
LILY PLANT: LILIUM PEACHBLUSH

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Sandy, Oreg.

Filed Dec. 27, 1977, Ser. No. 865,013
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its stately and erect growth; the great vigor of its growth; its strong stem; its abundant deep green foliage; its numerous buds, colored peach-pink when the tepals first divide and unfurl; the fine form and texture of the flowers; the exceptionally broad tepals; its rapid propagation characteristics; its superb disease resistance; its high tolerance to virus; its versatility both as a garden flower and as a cut flower produced by forcing precooled bulbs; and in particular its peach-pink color tone which is unique in the hybrid Asiatic division of upright lilies suited to forcing.

PATENTS

GRANTED Nov. 21, 1978

ERRATA

For CLASS	See PATENT NO.
405–287	4,126,001
405–296	4,126,002
405–261	4,126,003
405–259	4,126,004
405–261	4,126,005
405–220	4,126,006
405–271	4,126,007
405–207	4,126,008
405–260	4,126,009
405–202	4,126,010
405–196	4,126,011
405–157	4,126,012
405–169	4,126,013
351–160 R	4,126,138
422–056	4,126,417
422–064	4,126,418
422–109	4,126,419
422–162	4,126,420
422–177	4,126,421
096–110	4,126,472
521–031	4,126,588
521–031	4,126,589
521–089	4,126,590
526–240	4,126,603
542–449	4,126,615
546–075	4,126,616
546–081	4,126,617
546–339	4,126,618
562–507	4,126,634
562–441	4,126,635
562–472	4,126,636
562–421	4,126,637
562–487	4,126,638
568–804	4,126,749
568–804	4,126,750
568–879	4,126,751
568–902	4,126,752
176–036 R	4,126,767
331–094.5 G	4,126,890

PATENTS

GRANTED Nov. 21, 1978

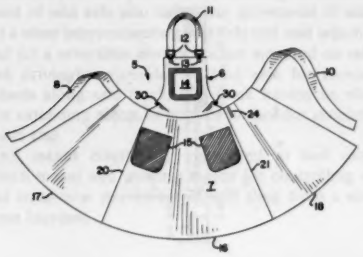
ERRATA

PATENTS

GRANTED NOVEMBER 21, 1978

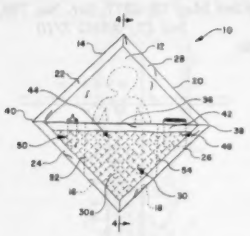
GENERAL AND MECHANICAL

4,125,902
FITS ALL SIZES WRAP-AROUND GARMENT
Michael B. Frank, Chicago, Ill., assignor to Uniforms To You & Co., Chicago, Ill.
Filed Aug. 15, 1977, Ser. No. 824,860
Int. Cl.[2] A41D *1/22*
U.S. Cl. 2—74 **5 Claims**



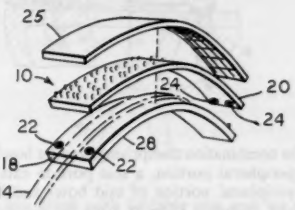
1. A wrap-around jumper dress comprising a separate wrap-around skirt and a separate bib with the lower edge of said bib being joined to the front central portion of the upper edge of said skirt, said lower edge of said bib and said front central portion of the upper edge of said skirt each being concave when laid out flat prior to being joined together.

4,125,903
BABY BLANKET
Weyma B. Farrell, Box 392, Pittsboro, N.C. 27312
Filed Sep. 15, 1977, Ser. No. 833,510
Int. Cl.[2] A41B *9/00*; A47G *9/00*
U.S. Cl. 2—69.5 **5 Claims**



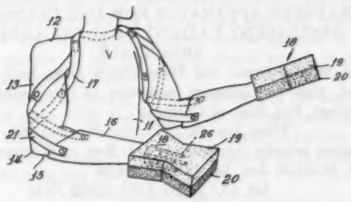
1. A baby blanket comprising: a generally rectangular cloth back having an outer border including four edges defining a first area within said border; and a baby receiving and holding compartment defined within said baby blanket by a generally triangularly shaped cloth enclosing panel secured adjacent to only a first portion of said back and extending thereacross; and wherein said enclosable panel has an area approximately one-half the area of said back and includes at least three edges with at least two edges being secured to said back by stitching leaving at least one edge unsecured relative to said back and open so as to define an entry to said baby compartment; and wherein said generally triangularly shaped enclosing panel is secured to said back such that the open unstitched edge thereof extends diagonally across said back between opposed corners thereof, with the two other remaining edges of said triangularly shaped enclosable panel being stitched to respective sides of said back.

4,125,904
SHOULDER STRAP PAD
Shirley Levine, 71 Gerry Rd., Chestnut Hill, Mass. 02167
Filed May 5, 1977, Ser. No. 794,307
Int. Cl.[2] A41D *27/26*
U.S. Cl. 2—267 **5 Claims**



1. A shoulder pad for strap borne bags, comprising
a flexible base having quick fastening means located on said flexible base adjacent to the upper corners thereof,
a flexible cover having corresponding quick fastening means adapted to mate with said flexible base quick fastening means for removably fastening the flexible cover to said flexible base with the bag strap therebetween, and a veneer removable attached to said flexible cover.

4,125,905
WASHING ATTACHMENT FOR ARTIFICIAL ARMS
Joseph I. Mitchell, 8259 S. Peoria, Chicago, Ill. 60620
Filed Jan. 28, 1977, Ser. No. 763,403
Int. Cl.[2] A61F *1/06*
U.S. Cl. 3—12.8 **2 Claims**



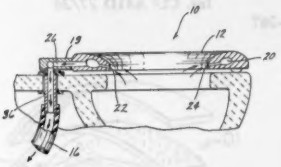
1. An attachment for an artificial arm, comprising
means for attaching the artificial arm and the attachment to a portion of a person's live arm to enable the person to bathe or wash,
said artificial arm having an extension at an extremity thereof,
said attachment comprising a sponge-like water retaining member positioned at said one extremity of said artificial arm opposite to the attaching means to the live arm,
said attaching means including standard straps for attaching the artificial arm to the live arm and to the body of the person,
and means for permanently securing the washing element to said one extremity of the artificial arm.

4,125,906

TOILET VENTILATING APPARATUS

George G. Weiland, 520-1st St. SE., Hampton, Iowa 50441

Continuation of Ser. No. 778,345, Mar. 17, 1977, abandoned.
This application Feb. 28, 1978, Ser. No. 882,119
Int. Cl.[2] E03D 9/052
U.S. Cl. 4—217 1 Claim



1. The combination comprising, a toilet bowl having an open upper peripheral portion, a seat portion extending over said upper peripheral portion of said bowl and having a pair of outwardly extended support arms for pivotal securement to said bowl, each support arm having a first bolt receiving aperture therein, a peripheral conduit extending around and through said seat portion, said peripheral conduit being closed except for a first port adjacent said support arms and a second port opposite said first port, said ports connecting said conduit with the interior of said bowl, one of said pair of support arms having a first passageway therethrough in communication with said peripheral conduit, a hinge means including a pair of upright support posts each having a second bolt receiving aperture rigidly connecting each support arm by a bolt passing through said first and second apertures and a nut engaged with each bolt to pivotally secure said seat portion to said bowl, one of said support posts having a second passageway extended generally axially therethrough and disposed in closed communication with said first passageway by said nut and bolt, said bolt extending through at least a portion of said onesupport arm, said first passageway, said second passageway and said one support post, an exhaust conduit connected to said second passageway, and an exhaust fan means in communication with said exhaust conduit so that air is withdrawn from said bowl through said ports, said peripheral conduit, said first passageway, said second passageway and said exhaust conduit by said fan means.

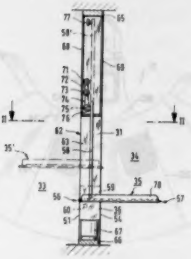
4,125,907

TRANSFER APPARATUS FOR THE TRANSFER OF RECUMBENT PATIENTS, PARTICULARLY IN HOSPITALS

Klaus M. Junginger, and Hans-Ulrich Jung, both of Rastatt, Fed. Rep. of Germany, assignors to Stierlen-Maquet AG, Rastatt, Fed. Rep. of Germany

Filed Jun. 10, 1977, Ser. No. 805,462
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1976, 2626638; Jun. 14, 1976, 7618858
Int. Cl.[2] A61G 1/02; E06B 7/00
U.S. Cl. 5—81 B 30 Claims

1. Apparatus for transferring recumbent patients, particularly in hospitals, comprising a platform assembly including frame means consisting of an upper and a lower frame element arranged to form said platform assembly in a horizontally disposed rectangular configuration consisting of superposed upper and lower planer platform members; an upper conveyor apron shaped as an endless belt trained about said upper frame element and arranged as part of said upper platform member; a lower apron trained about said lower frame element and arranged as part of said lower platform member; said upper and lower conveyor aprons being disposed to extend parallel to each other between said upper and lower frame elements with the portion of said upper conveyor apron extending over said upper frame element defining a surface for said platform assembly whereupon a recumbent patient may be received; a main support member having said platform assembly movably supported thereon; drive means located within said main support member and including means for horizontally shifting said platform assembly relative to said main support member; lateral cheek members connected with said frame means and extending along the sides of said platform assembly in directions parallel to the directions of movement of said assembly; and guide means mounted upon said main support member and located on opposite sides thereof, said guide means engaging



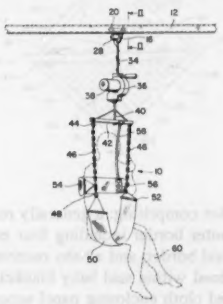
said lateral cheek members to guide movement of said platform assembly within a horizontal transfer plane extending to opposite sides of said main support member; said guide means and said lateral cheek members being constructed to enable movement of said platform assembly within said horizontal transfer plane between two opposed end positions of movement located generally equidistantly on opposite sides of said main support member, said horizontal transfer plane being thereby defined to extend generally symmetrically relative to said main support member.

4,125,908

INVALID TRANSFER LIFT

Dottie J. Vail, and Nancy Getches, both of 4608 S. Wood St., Chicago, Ill. 60609

Filed May 18, 1977, Ser. No. 798,158
Int. Cl.[2] A61G 7/10
U.S. Cl. 5—86 5 Claims



1. A remote controlled motorized invalid transfer lift capable of simultaneous vertical and transverse movement comprising:

a suspended sling including a seat and back support, and a pair of oppositely disposed chains secured at one end to said seat and at their opposite ends to a horizontal bar disposed above said sling;

motorized winch means secured to said horizontal bar and mounting said sling for vertical reciprocating movement;

a horizontally disposed generally rectangular track adapted to be mounted on the ceiling of a room, and including a

rack enclosed within and extending along the length of said track and an associated pinion enclosed within and in meshing engagement with said rack;

motorized traverse means disposed between said track and winch means for supporting and reciprocally moving said winch means and sling transversely along said track, said traverse means including (a) an axle enclosed within said track and carrying respectively a pair of oppositely disposed wheels aligned in rolling engagement with said track, a sprocket for imparting rotational movement to said axle, and said pinion for translating rotational movement of said axle into transverse movement of said sling, (b) a plate interconnecting said axle and said winch means, and (c) a reversible electric motor mounted on said plate and drivingly connected to said axle for moving said wheels along said track, said track having an elongated slot extending along its bottom surface for receiving said plate; and

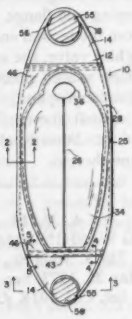
control means electrically connected to said motorized winch means and traverse means for controlling vertical and transverse movement of said sling from a single remote location.

4,125,909

COMBINATION SLEEPING BAG AND HAMMOCK

Daniel H. Jacobson, c/o Goodwin, 54 Hill St., Cooma N.S.W., Australia

Filed Jul. 22, 1977, Ser. No. 818,079
Int. Cl.[2] A45F *3/24*
U.S. Cl. 5—121 **10 Claims**



1. A combination hammock and sleeping bag, comprising:

a. a flexible elongated base,

b. flexible rigidity means extending peripherally around said base,

c. mounting means including an aperture at each end of said base so as to permit said base to be suspended above the ground,

d. a sleeping compartment of flexible water repellent material having a longitudinally extending opening for access thereto by the user of the sleeping bag,

e. releasable connecting means between said sleeping compartment and said base, and

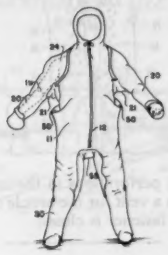
f. support means at each end of said sleeping compartment extending transversely thereto and enclosed by said repellent material, said support means being self adjusting to accommodate different size user of said sleeping compartment.

4,125,910

LAZY MAN'S SLEEPING BAG

Wassillie P. Nicholai, P.O. Box #1, Togiak, Ak. 99678

Filed May 16, 1977, Ser. No. 797,482
Int. Cl.[2] A47G *9/00*
U.S. Cl. 5—343 **1 Claim**



1. A sleeping bag fitted with foldable arm and leg sleeves that extend from an individual opening in a side of the bag to enable the sleeping bag to serve alternatively as a garment in which the wearer may walk about,

said bag formed of flexible material and shaped as a sleeping bag with a torso section of a size to enclose the complete body of a person with both legs and arms of the person enclosed in the said torso section, with

a pair of arm sleeves, each suitable for receiving an arm of the enclosed person each extending from an individual opening in an opposed side of an upper portion of the torso section, and

a pair of leg sleeves, each suitable for receiving a leg of the enclosed person, each extending from an individual opening in an opposed side of an intermediate portion of the torso section, with

a lower section of the torso section extending below the openings in the torso to which the leg sleeves are joined, and between said sleeves, such that said lower section may be folded, when the person has fitted each of his legs into a leg sleeve, between the leg sleeves and upwards about the back of the user, in which

an elastic loop in the shape of a closed ring is fixed to each of the two lower corners of the bag so as to tie the lower section of the torso section about the back of the wearer when each loop is mounted about an arm sleeve at the shoulder of the user after the wearer has shifted each of his legs into an individual leg sleeve, each said loop when so fastened, also serving to compact excess material of the crotch section of an arm sleeve about which it is so mounted, together with

a pair of pockets formed in the torso section of the bag that are each open from the exterior of the bag, with each pocket of a size and located so as to be able to receive and enclose a folded end of a leg sleeve and of an arm sleeve in the sleeping bag mode of the device.

4,125,911

ARTICLE WITH VENTING SLIDE FASTENER

George B. Moertel, Conneautville, Pa., assignor to Textron Inc., Providence, R.I.

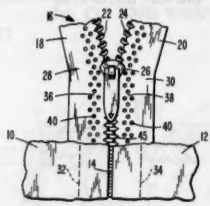
Filed May 16, 1977, Ser. No. 797,393
Int. Cl.[2] A47C *23/00*; A44B *19/00*
U.S. Cl. 5—347 **10 Claims**

1. A cushion, pillow, or like article with a venting slide fastener comprising

a pair of impervious article portions having an opening therebetween,

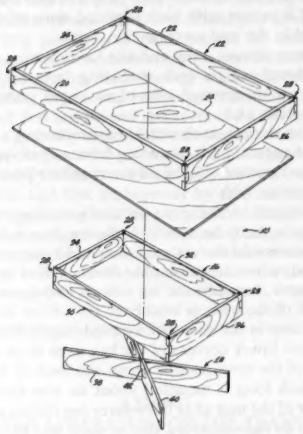
a slide fastener having a pair of support tapes formed from impervious material and having a pair of trains of interlocking elements secured to the inner edges of the respective tapes,

means securing outer portions of the tapes to the respective article portions leaving intermediate portions of the tapes between the inner edges and the outer portions free of the article portions, and



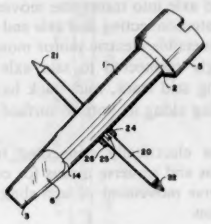
said tapes having perforations in the intermediate portions thereof to form a vent for the article through the opening when the slide fastener is closed.

4,125,912
WATERBED FRAME STRUCTURE
Mark L. Courter, 4723 S. Mill Ave., Tempe, Ariz. 85282
Filed Aug. 23, 1977, Ser. No. 827,003
Int. Cl.[2] A47B *27/08, 43/00*
U.S. Cl. 5—370 **6 Claims**



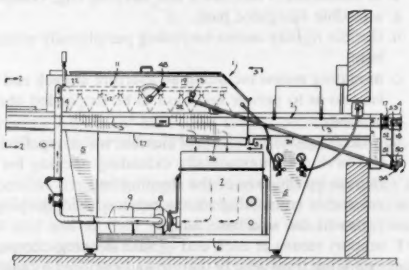
1. A waterbed frame structure comprising:
a. a mattress support frame of open rectangular configuration having four wall members demountably interconnected by interlocking corner joints to form an endless upstanding wall;
b. a planar platform for supporting said mattress support frame; and
c. said interlocking corner joints of said mattress support frame each comprising,
I. a tenon extending intermediately from the end of one of the wall members of said mattress support frame,
II. an open mortise formed in the end of the adjacent wall member of said mattress support frame, said open mortise having a spaced pair of projections separated by a gap into which said tenon is slidably straddingly positioned,
III. said tenon and said open mortise having a three segment bore formed therethrough with a first segment thereof formed through one of said pair of projections of said open mortise, a second segment thereof formed through said tenon, and a third segment thereof formed through the other one of said pair of projections of said open mortise, and
IV. an elongated headed pin slidably demountably positioned in said three segment bore formed through said tenon and said open mortise.

4,125,913
MULTIPURPOSE TUBE WRENCH
Lawrence J. Lewis, 760 W. Alameda, #18, Pocatello, Id. 83201
Filed Oct. 27, 1977, Ser. No. 845,866
Int. Cl.[2] B25B *13/00*
U.S. Cl. 7—138 **2 Claims**



1. A multipurpose tub wrench, comprising
an elongated substantially cylindrical handle having spaced opposite first and second ends, said handle having a diametrical bore formed therethrough intermediate the ends thereof;
a shower arm wrench body of hollow cylindrical configuration having an inner diameter substantially equal to the diameter of the handle, said wrench body being internally threaded and extending coaxially with the first end of the handle;
a plurality of substantially planar strips equiangularly spaced from each other and tapering downward to the second end of the handle from an area spaced from the second end, said second end being insertable into a gas log lighter flange for tightening said flange, and an axial bore formed in the handle from the second end for accommodating the stem of a log lighter valve, the axial bore having a plurality of equiangularly spaced grooves formed therein at the second end of the handle; and
a torque handle of shaft-like configuration removably accommodated in the diametrical bore of the handle for applying a torque thereto.

4,125,914
EGG WASHING MACHINE
William H. Warren, 729 S. Main St., Centerville, Mass. 02632
Filed May 25, 1977, Ser. No. 800,324
Int. Cl.[2] A01K *43/00*
U.S. Cl. 15—3.13 **13 Claims**



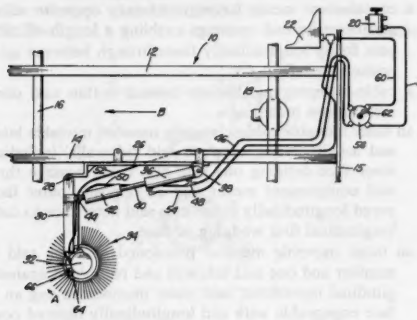
1. In an egg washing machine having a conveyor positioned for moving laterally arranged rows of eggs on the conveyor below egg scrubbing brushes being mounted in rows with the

brushes extending laterally across the conveyor at an angle to the rows of eggs whereby each brush engages less than the full number of eggs in each row of eggs at any one time, said brush mounting comprising a movable mounting permitting the brushes to move successfully with and against the movement of the conveyor, and drive means coupled to said mounting for moving the brushes in the direction of conveyor advance while said conveyor is stationary and for moving the brushes in the opposite direction while said conveyor is advancing the rows of eggs.

4,125,915
BOARD BRUSH FOR ICE-RESURFACING MACHINE

Richard F. Zamboni, Paramount, Calif., assignor to Frank J. Zamboni & Co., Inc., Paramount, Calif.

Filed Feb. 28, 1977, Ser. No. 772,831
Int. Cl.[2] E01H *1/02*; A46B *13/00*
U.S. Cl. 15—21 E **2 Claims**



1. A board brush apparatus for use on a self-propelled ice-resurfacing machine having a frame and a source of pressurized hydraulic fluid, said apparatus comprising:

a mounting bracket adapted to be attached to said frame on one side of the machine;

an arm pivotally connected at one end to said bracket for swinging movement in a generally horizontal plane between a laterally extending operative position and a retracted transport position;

a hydraulic motor mounted on the outer end of said arm and driving a rotary brush;

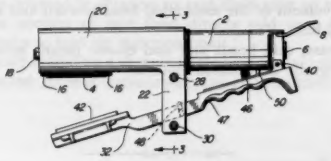
a hydraulic cylinder having a piston rod projecting from one end thereof, said hydraulic cylinder and piston rod being connected between said arm and said bracket whereby when the cylinder is extended said arm is swung out to said operative position, and when the cylinder is retracted, the arm is drawn back to said transport position;

fluid lines interconnecting both said cylinder and said hydraulic motor with a control valve which is connected, in turn, to said source of pressurized hydraulic fluid; said control valve being operable to activate both said cylinder and said hydraulic motor, whereby when said control valve is moved to one position, said hydraulic cylinder causes said piston rod to be extended to move said arm out to the operative position and said hydraulic motor is simultaneously caused to start rotating so as to drive said brush; and when the control valve is moved to another position, said cylinder causes said piston rod to retract said arm to the transport position and said hydraulic motor is simultaneously shut off.

4,125,916
TOOL FOR REMOVING INSULATING MATERIAL FROM ELECTRICAL CONDUCTORS

Joseph S. King, Upper Arlington, and Robert L. Huber, Columbus, both of Ohio, assignors to McGraw-Edison Company, Elgin, Ill.

Filed Jan. 17, 1977, Ser. No. 759,655
Int. Cl.[2] A46B *13/02*; H02G *1/12*; A46L *25/00*
U.S. Cl. 15—23 **12 Claims**



1. A hand-held portable device for stripping undesired material from a conductor and comprising:

an abrasive member mounted for motion in a fashion to yield the desired stripping action;

a motor mounted in the device to drive said abrasive member with the desired motion;

a supporting arm;

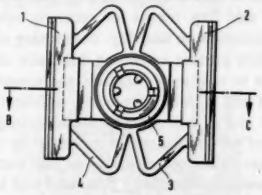
a pressure pad fixedly mounted on said supporting arm opposite said abrasive member with the conductor insertable therebetween, said pressure pad and said abrasive member being movable toward and away from one another by hand imparted force with said pressure pad being mounted on said supporting arm in a position to maintain contact between said abrasive member and the conductor and to prevent or retard movement of said device relative to the conductor; and

motor control means to cause energization of said motor only when said pressure pad and said abrasive member are brought within a preestablished distance from one another.

4,125,917
MOLDING CLAMP

Guy Andre, Grenoble, France, assignor to A. Raymond, Loerrach, Fed. Rep. of Germany

Filed Jun. 10, 1977, Ser. No. 805,456
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2626500
Int. Cl.[2] B60R *13/02*; E04F *19/02*
U.S. Cl. 24—73 FT **10 Claims**



1. A clamp for securing molding to a support comprising a base;

means carried by said base for securing the clamp to the support;

a pair of heads carried by said base for gripping the molding, said heads being connected to said base on opposite sides thereof, and lying in a comon plane therewith and

means for elastically connecting each of said heads and said base one to the other enabling movement of said heads

towards said base against the bias of said elastic means upon application of the molding to the clamp and movement of said heads away from said base to subsequently grip the molding under the bias of said elastic means and thereby secure the molding to the support, said elastic means including a pair of elongated plastic strips connecting each of said heads and said base one to the other and lying in said plane, each of said strips including first and second substantially linearly extending portions angularly related one to the other enabling each strip to flex upon movement of the associated head toward and away from said base,

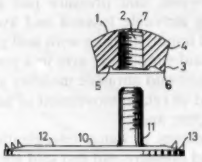
said base, said heads and said elastic means being molded integrally of a plastic material.

4,125,918

FASTENER FOR LACE SHOES

Allan H. Baumann, Box 81, Wendover, Ontario, Canada (K0A 3K0)

Filed Apr. 28, 1976, Ser. No. 681,159
Claims priority, application Canada, Apr. 30, 1975, 225750
Int. Cl.[2] A43C *1/00*
U.S. Cl. 24—117 **2 Claims**



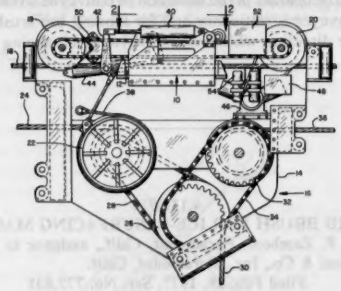
1. A fastener for lace shoes and the like having flaps with lace holes and a tied lace, comprising a substantially flat base portion, a stem extending substantially perpendicularly upward from said base portion to an upper end thereof, a button portion having a lower surface, a lower end, an upper end and an upper surface, attachment means for attaching said button portion to said stem comprising a screw thread, located around said upper end of said stem and a correspondingly threaded bore in said lower surface of said button portion, said stem being of a size suitable to permit said stem to be inserted through one of said lace holes in one of said flaps from an inside surface of said flap, means for retaining said base portion in chosen orientation on said flap, comprising said threaded bore in said button portion extending internally of said button portion almost to said upper surface, the remaining thickness of material at end of said bore being sufficiently thin to permit said upper end of said stem to break through said remaining thickness of material in order to draw up said base portion firmly toward said lower surface of said button portion upon said flap being exceptionally thin, said tied lace having a free loop, means for selectively retaining a portion of said loop around said button portion and selectively permitting said portion of said loop to be removed from said button portion by said loop portion being pulled upward and away therefrom, means for preventing inadvertent disengagement of said button portion from said stem, comprising a pressure fit between said threads in said button portion and said threads on said stem, and means to facilitate relocation of said loop portion around said button portion upon said loop portion having been removed therefrom.

4,125,919

CABLE CLAMP

Eston A. Dumont, Rte. 1, Box 142, Glide, Oreg. 97443

Filed Mar. 24, 1977, Ser. No. 780,751
Int. Cl.[2] F16G *11/04*
U.S. Cl. 24—136 R **19 Claims**



1. A releasable cable clamp comprising:

a containment means having stationary opposite sidewalls and opposite end openings enabling a length of cable to pass freely longitudinally therethrough between said opposite sidewalls,

a cable-clamping mechanism housed within said containment means including:

an inner movable cable-clamping member movable laterally and longitudinally between said sidewalls, including an inner face defining one side of a cable passage through said containment means and an opposite outer face tapered longitudinally relative to said inner face to define a longitudinal first wedging surface,

an outer movable member positioned between said inner member and one said sidewall and restrained against longitudinal movement, said outer member having an inner face engageable with and longitudinally tapered complementarily to the outer face of said inner member to define a longitudinal second wedging surface cooperative with said first wedging surface,

and clamp-activating means including a clamp-activating third wedging surface movable in opposite directions normal to the lateral directions of movement of said inner member into and out of a confined wedging space between said inner member and said one sidewall so as to generate an initial lateral cable-clamping force to move said inner member laterally into gripping engagement with a cable within said cable passage when said third wedging surface is forced into said wedging space, said first and second wedging surfaces being longitudinally slidably cooperative to generate through wedging interaction a progressively increasing lateral cable-clamping force through said inner longitudinally movable member to supplement said initial force in resisting slippage forces tending to cause relative movement between said inner member and a cable within said passage.

4,125,920

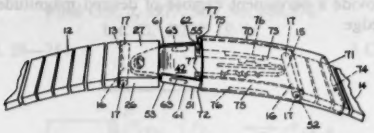
FASTENING MECHANISM

Larry R. Grimes, 3476 E. Ashlan, Apt. 178, Fresno, Calif. 93726

Filed Apr. 4, 1977, Ser. No. 784,333
Int. Cl.[2] A44B *11/00*; A44C *5/00*
U.S. Cl. 24—201 R **2 Claims**

1. A fastening mechanism for a watch band or the like having opposite ends, the mechanism comprising a key having a handle portion attached to one of the opposite ends, being curved and having edges convergent in the direction of the watch band and an opposite substantially flat shaft portion; a housing attached to the other of said opposite ends dimen-

sioned to receive the shaft portion of the key and having a portion remote from said other of said opposite ends curved to conform to the curve of the handle portion of the key with



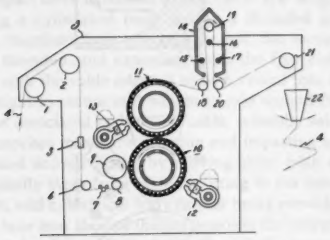
upstanding walls bounding said curved portion of the housing and convergent for individual engagement with said edges of the key; and a closure slidably mounted on the housing releasably to capture the key within the housing.

4,125,921

APPARATUS FOR GAS-SINGEING KNITTED FABRICS

Narukazu Okazaki, and Hiroshi Azuma, both of Wakayama, Japan, assignors to Wakayama Iron Works, Ltd., Wakayama, Japan

Filed Jun. 3, 1977, Ser. No. 803,316
Int. Cl.[2] D06C 9/02
U.S. Cl. 26—3 **6 Claims**



1. An apparatus for gas-singeing knitted fabrics, comprising a feeding section including expanding means and selvage spreading means for feeding a knitted fabric to a singeing section in a tensionless and expanded condition; suction means for creating a suction; two suction roller means for allowing the knitted fabric to travel in an S-curve in a tensionless and expanded condition, each of the suction roller means comprising an inner barrel coupled at one end thereof to the suction means, the inner barrel including uniform suction distributing means having a density which increases as a function of the distance from the one end of the inner barrel, an outer barrel surrounding the inner barrel and coaxial therewith, with an annular space therebetween, the outer barrel including a plurality of small holes therethrough, and mesh means wrapped around the outer surface of the outer barrel; two gas burners associated with the suction roller means and including a singeing condition adjusting mechanism, wherein both surfaces of the knitted fabric moved in an S-curve by the two suction roller means are alternately gas-singed throughout the width thereof; and means for extinguishing the residual fire on the knitted fabric after singeing.

4,125,922

JET TANGLER

Malcolm P. Irwin, West Grove, Pa., assignor to Techniservice Division, Textured Yarn Co. Inc., Kennett Square, Pa.

Filed Sep. 22, 1977, Ser. No. 835,583
Int. Cl.[2] D02G 1/16, 1/12
U.S. Cl. 28—221 **12 Claims**

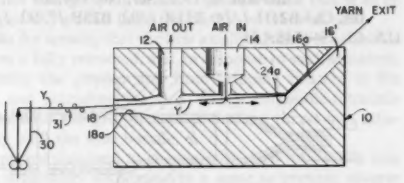
1. A jet tangler for multifilament yarn comprising:

a. a body having a passageway through which the yarn is extended in a predetermined path for movement in a downstream direction,

b. said body having a fluid inlet for projecting fluid under pressure against said yarn while said yarn is travelling in said yarn passageway, said fluid inlet having an air injection point at the intersection of said passageways (a) and (b),

c. said body having a fluid release passageway located upstream of said fluid inlet passageway for releasing at least a portion of said fluid, said fluid release passageway being further located in relation to said fluid inlet so that said release portion of said fluid directs said yarn in close proximity to said air injection point.

b. said body including a sharply angled yarn exit passageway connected to said passageway (a) at a location down-



stream of said fluid inlet for sharply changing the path of said yarn in said body, said exit passageway being further located so that said angled path of said yarn brings said yarn close to said air injection point.

11. In combination,

a. a stuffer crimper having a crimping region and an entrance and an exit for yarn, together with means for forcing said yarn into said region to accumulate temporarily and to crimp therein, the yarn accumulation being unconfined at the exit from said region,

b. a yarn tension device located downstream of said stuffer crimper to receive yarn from said unconfined exit, and

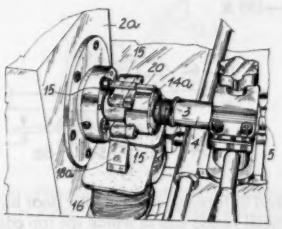
c. a jet tangler downstream of said yarn tension device (b), and connected to receive the yarn therefrom, said jet tangler being the tangler of claim 1.

4,125,923

MACHINE FOR THE CRIMPING OF YARNS, IN PARTICULAR FOR PRODUCING FALSE, WAVY HAIRS FOR WIGS

Giuseppe Scoleri, Via Per Occhieppo Superiore, 1, Pollone (Vercelli), Italy

Filed Sep. 29, 1977, Ser. No. 837,858
Claims priority, application Italy, Oct. 6, 1976, 28044 A/76
Int. Cl.[2] D02G 1/00; B29C 17/02
U.S. Cl. 28—278 **4 Claims**



1. A machine for the crimping of yarns, in particular for producing false, wavy hair for wigs, comprising a bed plate, a mandrel rotatably mounted on the bed plate, a cylindrical supporting element, said mandrel being disposed co-axially

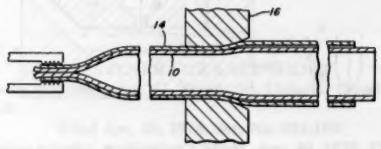
about said supporting element, said yarn being fed from a feeding package and led eccentrically through said mandrel and spirally wound about said supporting element, magnetic means connected on said bed plate operative to prevent rotation of said supporting element to retain same in a fixed position, and a control mechanism for axially reciprocating said supporting element for discharging said yarn in cooperation with a bush disposed therebout while said yarn is continuously wound about said supporting element.

4,125,924

METHOD OF PRODUCING COMPOSITE METAL PIPE

Edward S. Goetze, Ross Township, Lake County, Ind., and Frank Kennedy, Mt. Lebanon Township, Allegheny County, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 4, 1977, Ser. No. 784,005
Int. Cl.[2] B21H *1/14*; B21K *1/02*; B23P *17/00, 11/00*
U.S. Cl. 29—148.4 D **11 Claims**



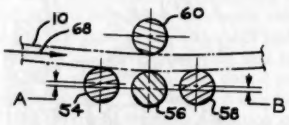
1. A method for producing a composite metal pipe consisting essentially of selecting a first pipe member made of a drawable and work-hardneable metal, cold sink drawing said first pipe member through a first die having a die angle no greater than 30° to work-harden the microstructure thereof, selecting a second pipe member made of a work-hardenable metal having a hardness which is less than the hardness of the work-hardened first pipe member and having an inside diameter larger than the outside diameter of the work-hardened first pipe member, telescoping said second pipe member over said first pipe member, and cold sink drawing the telescoped pipe members through a second die having a die angle no greater than 30° to stretch and compress said second pipe member tightly over the first pipe member to form a composite pipe thereof such that the weight per unit length of said second pipe member is reduced at least about 10% but not more than 50% and the weight per unit length of said first pipe member is reduced from about 3 to 5%.

4,125,925

METHOD OF MAKING DOOR

Romer G. Weyant, 81 Edgewater Dr., Elkhart, Ind. 46514

Division of Ser. No. 763,363, Jan. 28, 1977, Pat. No. 4,064,655, which is a continuation of Ser. No. 623,031, Oct. 16, 1975, abandoned. This application Oct. 19, 1977, Ser. No. 843,726
Int. Cl.[2] B23P *17/00*
U.S. Cl. 29—155 R **2 Claims**



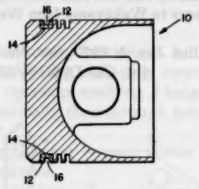
1. A method of forming a rectangular door having front and rear sheet metal panels and in which the top edge, the bottom edge and the hinge-edge are straight and the bolt-edge is cambered, comprising the steps of fabricating the front and rear sheet metal panels with a core portion sandwiched therebetween, enclosing the full length of each edge within the recessed portion of a U-shaped metallic channel member and securing the channel members in place to form a door having four straight edges bordered by the channel members, and feeding the door lengthwise between forming elements arranged to maintain the hinge-edge straight while bending the bolt-edge beyond the elastic limit of its channel member so as to provide a permanent camber of desired magnitude in the bolt-edge.

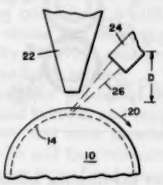
4,125,926

METHOD OF MAKING ALUMINUM PISTON WITH REINFORCED PISTON RING GROOVE

Preston L. Gale, East Peoria, and Jack E. Fair, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 609,264, Sep. 2, 1975, Pat. No. 4,074,616. This application Mar. 25, 1977, Ser. No. 781,264
Int. Cl.[2] B23P *15/10, 9/00*; F16J *1/02*
U.S. Cl. 29—156.5 R **5 Claims**





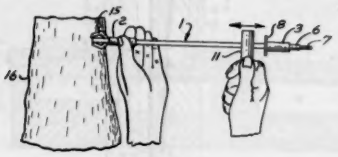
1. The method of making a piston of aluminum or aluminum alloy with a reinforced piston ring groove comprising the steps of

a. providing a piston blank with an oversize peripheral piston ring groove of given width formed therein;
b. mounting said piston blank for rotation about its cylindrical axis;
c. continuously introducing a powder of a metal harder than said aluminum or aluminum alloy into said oversize groove at a selected point;
d. rotating said piston blank about said cylindrical axis thereof;
e. impinging a beam of coherent electromagnetic energy focused to a diameter smaller than said given width of said oversize groove on said metal powder substantially at the point of introduction thereof into said groove, said beam having a power density such that all of said metal powder at the area impinged by said beam is heated to the melting point thereof and subsequently solidifies in said groove after impingement by said beam;
f. continuing said steps of introducing said metal powder, rotating said piston and impinging said beam until a unitary ring of said melted and subsequently solidified metal powder substantially filling said oversize groove is formed in situ in said groove with a diffusion zone of an alloy of said metal powder with said aluminum or aluminum alloy at the interface between said unitary ring and said piston blank; and
g. forming a piston ring groove in said unitary ring.

4,125,927
EMBEDDED ARROWHEAD RETRIEVING AND MULTIPURPOSE TOOL

James L. Geary, 42319 N. Addison, Antioch, Ill. 60002

Filed Oct. 3, 1977, Ser. No. 838,570
Int. Cl.[2] B23P *19/04*
U.S. Cl. 29—254 3 Claims

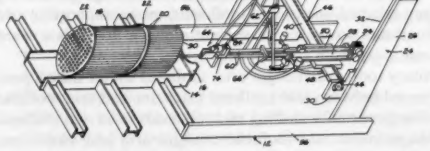


1. An embedded arrowhead retrieving and multipurpose tool comprising a length of flexible cable, first and second fittings secured, respectively, to the ends of said cable, said first fitting comprising a body having a bore extending thereinto from the free end thereof coaxially with said cable, said bore being threaded to receive a threaded arrowhead stud therein, said second fitting comprising means for receiving and transmitting impact force in tension to said cable, and weight means comprising a cylindrical body having a threaded axial bore extending thereinto from one end thereof, the second fitting having a threaded stud extending from the free end thereof coaxially with the cable adapted to be screwed into said bore in said weight to secure said weight to said second fitting and thus to the associated end of said cable, whereby said weight means comprises means for gripping and imparting an impact force to said second fitting by moving same with sufficient velocity axially away from said first fitting to the limit of such movement, said cylindrical body further being provided with a diametric hole near the end thereof opposite the threaded bore, said hole being larger than the cable and the second fitting being provided with stop means whereby said body may alternatively be placed on the flexible cable used as a slide hammer to apply impact force to said stop means.

4,125,928
METHOD AND APPARATUS FOR PULLING TUBES FROM HEAT EXCHANGER BAFFLES

Don Cawley, Port Neches, and Bob Ohmstede, Beaumont, both of Tex., assignors to Ohmstede Machine Works, Inc., Beaumont, Tex.

Filed Aug. 17, 1977, Ser. No. 825,392
Int. Cl.[2] B23P *19/02*
U.S. Cl. 29—282 6 Claims



1. Apparatus for pulling tubes from a tube bundle, which includes at least one baffle plate through which a plurality of such tubes tightly pass, said apparatus comprising:

a. A cradle for securely supporting the tube bundle against axial movement of the whole tube bundle when a tube is being pulled axially therefrom;

b. a gripper unit, including means for releasably gripping a tube to be pulled out;

c. a tool platform having said gripper unit mounted thereon;

d. a fixed frame;

e. means movably mounting the tool platform on the fixed frame for transverse movement to bring the gripper unit to an address where it is in axial alignment with any selected one of the tubes that is to be pulled out next;

f. axially extensible-retractile means interconnecting the gripper unit and tool platform, for thrusting the gripper unit axially forwards into adjacency with the tube bundle and for pulling a gripped tube axially from the bundle;

g. means interconnecting the gripper unit and said axially extensible-retractile means for axially advancing the gripper unit into gripping relation with the tube that is to be gripped and pulled from the bundle in the next pull;

h. means for sensing that the first axially extensible-retractile means is fully retracted, and, in response to such sensation, releasing the gripper unit from gripping relation to the tube and extending the first axially extensible-retractile means until the gripper unit is thereby thrust into adjacency with the tube bundle;

i. stop means stationed to engage with each tube when that tube is partially withdrawn in a sense to prevent reverse axial travel of that tube back toward the tube bundle;

j. means for sensing whether, when the gripper unit has been thrust into adjacency with the tube bundle,

I. the gripper unit remains beside an axially further upstream portion of the same tube the gripper unit had just pulled axially from the bundle or

II. the gripper unit no longer remains beside a tube, meaning that the tube the gripper unit had just pulled axially from the bundle has been completely withdrawn and advanced past the gripper unit, and

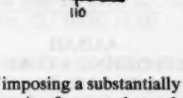
if (I) is sensed, signal the axially extensible-retractile means to automatically place the gripper unit in gripping relation with the pipe again and fully retract again, but

if (II) is sensed, await readdressing of the tool platform.

4,125,929
DEFORMABLE METALLIC ELEMENT

John E. Rode, Fonda, N.Y., assignor to Temper Corporation, Fonda, N.Y.

Division of Ser. No. 447,571, Mar. 4, 1974, Pat. No. 4,067,585, which is a continuation of Ser. No. 181,219, Sep. 16, 1971, abandoned, which is a continuation-in-part of Ser. No. 841,436, Jul. 14, 1969, abandoned. This application Sep. 30, 1977, Ser. No. 838,306
Int. Cl.[2] B23P *11/02*
U.S. Cl. 29—446 8 Claims



1. The method of imposing a substantially constant predetermined preload on a pair of opposed members through a substantial range of relative movement of the members toward each other which comprises: forming substantially parallel annular surfaces on said members which are in spaced opposed relation, interposing a thin walled tubular element between said surfaces, said element being formed with an odd number of not less than three curved annular convolutions and comprising a hard resilient but ductile metal which work hardens

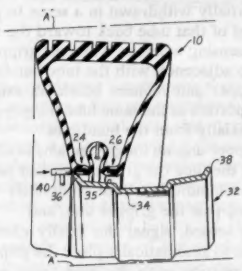
when stressed to beyond the elastic limit, moving said parts relatively in a direction perpendicular to said surfaces to cause said surfaces to engage and axially compress said element in the axial direction, continuing said movement of said parts in said direction through the range of resilient deformation of said element and until said element commences to undergo plastic deformation, and discontinuing said movement of said parts while said element is in said period of plastic deformation and prior to the complete axial collapsing of said element, and fixing said members together against relative movement thereof in a direction to move said surfaces away from each other and with the element confined within an axial space not longer than the length of said element when movement of said parts toward each other is discontinued plus the amount of resilient axial springback of said element.

4,125,930

METHOD FOR MOUNTING A CLOSED TOROUS TIRE ON A RIM

Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 13, 1977, Ser. No. 815,111
Int. Cl.[2] B23P *11/02*
U.S. Cl. 29—450 **8 Claims**



1. A method for mounting a closed torous tire on a rim, said tire having a rim wall, a tread wall, opposed side walls, a chamber, an outer surface, a valve assembly extending from an outer surface into communication with the chamber, and a respective roll hoop area generally defining the juncture between each side wall and the rim wall, said rim having a tire seat, comprising:

withdrawing a volume of fluid from the tire chamber through the valve assembly, said volume of withdrawn fluid being of a magnitude sufficient for reducing the pressure within the chamber to a lower magnitude than atmospheric pressures and moving the opposed roll hoop areas to locations adjacent one another in response to said withdrawing of said volume of fluid;

thereafter urging the tire onto the rim with the pair of roll hoop areas positioned adjacent the tire seating surface of the rim; and

passing a volume of fluid through the valve assembly and into the tire chamber, said volume of fluid passing into the chamber being a volume sufficient for inflating the tire to a preselected pressure and seating the tire on the tire seating surface of the rim.

4,125,931

METHOD OF SUPPORTING A CORE WITHIN A MOLD

Fred W. Pierson, Sr., Grand Rapids; Fred W. Pierson, Jr., Wyoming, and Gordon J. Weidenfeller, Grandville, all of Mich., assignors to M&T Mfg. Co., Grand Rapids, Mich.

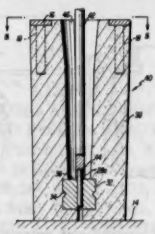
Division of Ser. No. 599,145, Jul. 25, 1975, Pat. No. 4,040,597.
This application Apr. 27, 1977, Ser. No. 791,517
Int. Cl.[2] B21D *39/00*; B23P *19/04*
U.S. Cl. 29—455 R **5 Claims**

1. A method of supporting a core within an opening of a mold member for a molded part which comprises the steps of

(a) locking a bushing member within said mold by permanently molding said bushing member therein,

(1) said bushing having a cylindrical bore therein constituting an extension of the opening in said mold member and in a predetermined alignment therewith,

(b) inserting a short pin means within said bore of said bushing member so that said pin means extends only slightly above said bushing member,



(c) providing a rod-like core member with a countersunk hole on one end thereof,

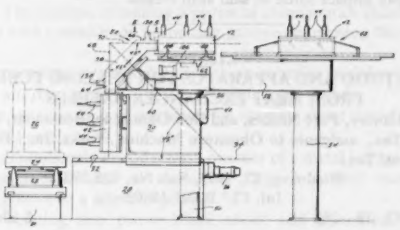
(d) and inserting said short pin means in said countersunk hole thereby mounting said core member on said pin means of said bushing member.

4,125,932

MULTIPLE SPINDLE MACHINE TOOL

Ervin J. Kielma, West Allis, and Albin J. Schabowski, Milwaukee, both of Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.

Filed Jun. 20, 1977, Ser. No. 808,107
Int. Cl.[2] B23Q *3/157*
U.S. Cl. 29—568 **14 Claims**



1. A multiple spindle machine tool comprising:

a plurality of multiple spindle toolheads;

a toolhead magazine for storing said toolheads;

a worktable;

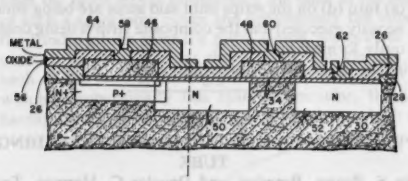
a toolhead driver having means for receiving and driving any selected one of said toolheads, means supporting said toolhead driver for movement along a first axis toward and away from said worktable; and

a rotary toolhead changer arm, toolhead shifter means positioned between said toolhead magazine and said toolhead changer arm for shifting said toolheads from said toolhead magazine to said toolhead changer arm and vice versa, said toolhead changer arm having means for transferring toolheads from said toolhead shifter means to said toolhead driver and vice versa, said toolhead changer arm being journalled to a frame for rotation about a second axis which is inclined at an angle of 45° to said first axis.

4,125,933
IGFET INTEGRATED CIRCUIT MEMORY CELL

Steven M. Baldwin, San Diego; Donald L. Henderson, Sr., Encinitas, and Joel A. Karp, Palo Alto, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 703,524, Jul. 8, 1976. This application May 2, 1977, Ser. No. 792,578
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—571 10 Claims



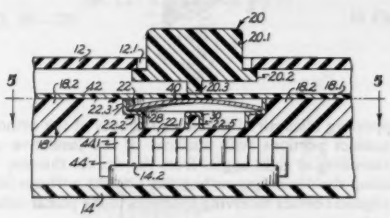
1. A method of making an enhanced semiconductor capacitor comprising the steps of:
- forming an insulating layer on a major surface of a semiconductor substrate, said substrate being of one conductivity type with a given impurity concentration;
- applying a maskant layer on the insulating layer;
- opening a window in the maskant layer;
- implanting impurity ions of said one conductivity type in said substrate surface through said window to form a region having the same conductivity type as said substrate yet having a greater impurity concentration than said substrate;
- implanting impurity ions of the opposite conductivity type and at a lower energy level than said ions of one said conductivity type into said region through the same window to form an island of opposite conductivity type within said region;
- removing said maskant layer; and
- forming a conductive field plate on said insulating layer and overlying said island;
- said region of said one conductivity type serving to increase the capacitance of the inversion layer associated with said island when a voltage is applied to said conductive field plate.

7. A method of making a memory cell having an enhanced capacitor and a transfer transistor comprising the steps of:
- forming an insulating layer on the surface of a semiconductor substrate of one conductivity type with a given impurity concentration;
- forming a maskant layer over said insulating layer;
- opening a window in said maskant layer in regions wherein the capacitor is desired to be formed;
- implanting ions of said one conductivity type into said substrate surface through said window thereby forming a region in said substrate having a greater impurity concentration than the substrate;
- implanting through said same window impurity ions of the opposite conductivity type and at a lower energy than said ions of said one conductivity type to form an island within said region thereby forming a PN junction therebetween;
- removing the maskant layer;
- forming a second mask on said insulating layer having openings defining source and drain regions for a transfer transistor, with said source region opening being adjacent said island;
- diffusing impurity ions of said opposite conductivity type into said substrate surface to form said source and drain regions for the transfer transistor, the impurity ions of said source and island regions mutually laterally migrating so that said island and source region overlap to form a conductive connection therebetween, said region having a greater impurity concentration similarly laterally migrating to wholly surround lower portions of said island;
- forming a field plate on said insulating layer and overlying said island; and
- forming a gate region on said insulating layer and overlying portions of said substrate between said source and drain regions;
- said region having a greater impurity concentration than said substrate serving to increase the capacitance of the inversion layer associated with said island when a voltage is applied to said field plate.

4,125,934
KEYBOARD APPARATUS AND METHOD OF MAKING

Laurence J. Keough, Walpole, and Bruce D. Butts, North Easton, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 471,943, May 21, 1974, Pat. No. 4,074,088. This application Nov. 21, 1974, Ser. No. 526,024
Int. Cl.[2] H01H *11/04, 13/48*
U.S. Cl. 29—622 7 Claims



1. A method for making a keyboard apparatus comprising the steps of forming a dielectric card with a plurality of recesses in one card side; depositing electrically conductive film means on said recessed card for forming first and complementary electrical contacts in spaced relation to each other within said respective card recesses and for forming circuit paths electrically connected to said contacts in a selected manner; disposing a plurality of electrically conductive elements, each having a dished configuration movable with snap action to an inverted dished configuration in response to pressure applied, within said respective card recesses to be located by said recesses in an open circuit position in engagement with said first contacts in said recesses and spaced from said complementary contacts in said recesses, and mounting a plurality of key means on said one card side in alignment with said respective recesses for movement to selectively press said snap-acting elements toward said inverted dished configuration to additionally engage said complementary contacts in said recesses to selectively close electrical circuits between said contacts.

4,125,935
METHOD FOR ASSEMBLY OF ELECTRICAL CONNECTOR

J. Preston Ammon, Dallas, Tex., assignor to Elfab Corporation, Dallas, Tex.

Division of Ser. No. 667,963, Mar. 18, 1976, Pat. No. 4,050,769. This application Jun. 13, 1977, Ser. No. 805,786
Int. Cl.[2] H02G *15/00*
U.S. Cl. 29—629 4 Claims

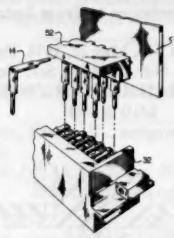
1. A method of assembling an electrical connector for orthogonal interconnection of planar substrates and which includes a removable insulative casing and an insulative plug interfittable therewith, said casing having a plurality of linear transverse sleeves formed therethrough and press fit contact terminals formed in a right angle configuration and adapted for positioning transverse portions thereof in the sleeves and orthogonal portions thereof in spaced alignment with contact receiving apertures formed in a planar substrate, said method comprising:

inserting the transverse portions of the contacts into the transverse portions of the sleeves in the insulative casing with the orthogonal contact portions depending therefrom in generally parallel spaced relationship;

inserting an insulative plug having spaced sleeves therein over the depending orthogonal contact portions to receive one of the orthogonal portions into each sleeve;

supporting the orthogonal contact portions along their edges to prevent twisting movement thereof during subsequent press fitting of the contacts;

supporting the entire length of both the inner and outer surfaces of the transverse contact portions within the sleeves in the insulative casing;



supporting a length of the inner surfaces of the orthogonal contact portions with surfaces of the insulative casing extending at right angles from the sleeves therein;

guiding the depending orthogonal contact portions into the aligned contact receiving apertures in the planar substrate; and

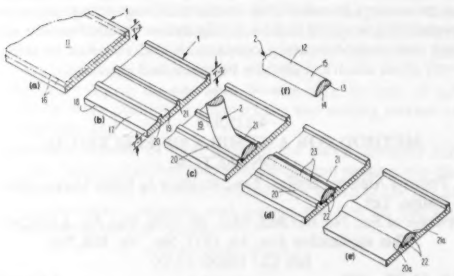
applying a force to the side of the insulative casing opposite the depending orthogonal contact portions to transmit an axial force to said orthogonal contact portions to press fit said contacts into the contact receiving apertures in the substrate until the point that the face of said insulative plug abuts the upper surface of the substrate.

4,125,936

COMPOSITE STRIP FOR FABRICATING SPRING CONTACTS

John J. Rozmus, 1030 Derwydd La., Berwyn, Pa. 19312

Filed Sep. 1, 1977, Ser. No. 829,661
Int. Cl.[2] H01R *9/00*
U.S. Cl. 29—630 C **4 Claims**



1. The method of making a composite metal strip to be fed to die means for stamping electrical contacts:

providing a roll of metal body strip;

providing a roll of metal surface having a precious metal contact surface;

feeding said strips out of the rolls and performing the following operations on the strips:

(a) machining a slot along the longitudinal axis of the body strip;

(b) inserting the surface strip in said slot with the contact surface spaced outwardly of the body strip to provide for exposure of a substantial portion of the contact surface;

(c) seam welding the surface strip and the body strip;

(d) roll deforming the respective opposite edges of the slot to cause the deformed metal to extend over and tightly engage and bear down on portions of said contact surface while maintaining said exposure;

moving said strips along said axis while repeating said steps (a) thru (d) on the strips until said steps are being simultaneously executed and the composite strip is being continuously formed; and

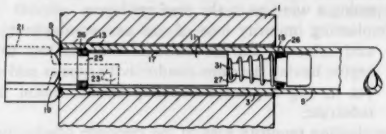
winding the composite strip into a roll.

4,125,937

APPARATUS FOR HYDRAULICALLY EXPANDING A TUBE

Philip S. Brown, Brandon, and Douglas G. Harman, Tampa, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 28, 1977, Ser. No. 810,817
Int. Cl.[2] B23P *15/26*
U.S. Cl. 29—727 **5 Claims**



1. Apparatus for hydraulically expanding a tube into engagement with a tube sheet, said apparatus comprising:

a mandrel having an outer diameter smaller than the inner diameter of said tube so as to form an annular cavity between the tube and the mandrel when the mandrel is inserted in said tube;

said mandrel having a fluid inlet port in one end thereof;

said fluid inlet port being in fluid communication with said annular cavity;

said one end having a shoulder extending radially outwardly beyond the inner diameter of said tube;

a circumferential groove adjacent said one end of said tube for receiving a first sealing means which forms a fluid type seal adjacent said one end of said cavity;

a tapered portion adjacent said other end of said mandrel;

said tapered portion expanding outwardly as it approaches said other end of said mandrel;

a second sealing means disposed on said tapered portion and forming a seal adjacent the other end of said cavity; and

means for biasing said second sealing means toward the other end of said mandrel, whereby said mandrel may be easily slipped into said tube without damaging the sealing means which first enters the tube and providing a fluid-tight seal adjacent each end of the annular space.

4,125,938

SPARK PLUG COVER REMOVER

Robert E. Clark, Minneapolis, Minn., assignor to Thexton Manufacturing Company, Minneapolis, Minn.

Filed Apr. 21, 1977, Ser. No. 789,508
Int. Cl.[2] B23P *19/04;* **B25B** *27/02*
U.S. Cl. 29—764 **2 Claims**

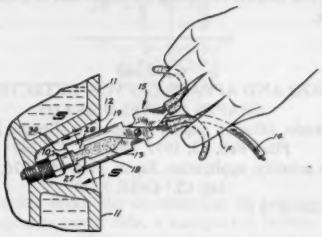
1. A spark plug cover removing tool, comprising

a pair of elongate lever arms of flat rolled steel and lying along each other and having hook shaped handle means turned outwardly away from each other at corresponding ends of the arms to be manually gripped, the lever arms having flat intermediate portions lying against each other

adjacent the handle means and crossed in relation to each other,

pivot means swingably connecting the flat intermediate portions of said lever arms together, and

a pair of elongate gripping jaws lying along each other, each formed integrally of a respective lever arm and confronting each other to be swung about said pivot means and moved toward and away from each other to embrace and release such spark plug cover, the jaws having a length from the pivot means substantially the same as the length of such a spark plug cover and substantially the same as the handle means from the pivot means, the jaws in one position being of circular shape about a single axis and each of the jaws extending peripherally through an arc which is substantially less than semicircular, the jaws having inner ends adjacent the pivot means to which said



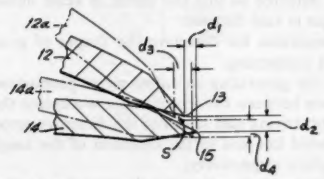
intermediate portions of the arms are connected such that said flat intermediate portions lie substantially tangentially of the arcuately curved jaws whereby the jaws are entirely at one side of the lever arms and whereby a spark plug cover and cable therefrom may extend through the jaws and along the intermediate portions and handle means of the lever arms without obstruction, and each of the jaws having a terminal end and an inwardly turned lip to engage and bear endwise against the end of the plug cover, each of the elongate jaws having a pair of longitudinally extending side edges confronting the side edges of the other jaw, and each of the jaws having peripherally extending rigid gripping tabs projecting from the side edges of the jaw and extending toward each other and biting into the resilient plug cover to facilitate turning the cover against resistance.

4,125,939

RAZOR BLADE ARRANGEMENT

Abe R. Brothers, 3215 Ave. H, Brooklyn, N.Y. 11210

Filed Jun. 6, 1977, Ser. No. 803,654
Int. Cl.[2] B26B *21/22*
U.S. Cl. 30—50 **13 Claims**



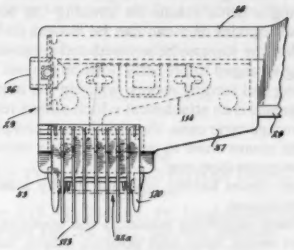
1. A razor blade arrangement comprising a first generally planar razor blade having a longitudinally extending cutting edge; a second generally planar razor blade identical to said first razor blade and having a longitudinally extending cutting edge; means including a spacer element adapted to be disposed between said razor blades, said means being configurated and dimensioned to bend both razor blades and offset the relative angular orientations of the planes of said cutting edges with respect to each other and to space said cutting edges from each other in directions substantially normal and parallel to the planes of said razor blades to place the cutting edges in extreme proximity to each other while maintaining the blade portions near the cutting edges in uniform pressure abutment immediately adjacent to the longitudinal cutting edges when said razor blades and said insert element are placed in a safety razor to form between said cutting edges a longitudinal space having a generally triangular cross-section, said insert element further maintaining said razor blades in generally parallel longitudinal relation during use.

4,125,940

HAIR TRIMMER

Richard Ihasz, Milford, and Antonio Pires, Wallingford, both of Conn., assignors to Sperry Rand Corporation, Bridgeport, Conn.

Filed Aug. 17, 1977, Ser. No. 825,331
Int. Cl.[2] B26B *19/06, 19/20*
U.S. Cl. 30—220 **10 Claims**



1. A hand-held, electrically energized hair trimmer comprising:

a. an elongated hand-held trimmer housing having a length thereof and including a first housing segment housing an electrical energizable drive means and a second housing segment for supporting a cutter assembly;

b. a drive member operatively engaged with said drive means extending from said drive means to said second housing segment and mounted for linear reciprocating motion within said second housing segment;

c. said second housing segment alternatively including a demountable clipper assembly or a demountable trimmer assembly, said trimmer assembly including a drive extension member mounted for linear reciprocating movement therein;

d. a clipper cutter assembly supported by said demountable clipper assembly and a trimmer cutter assembly having a longitudinally extending array of cutter teeth supported by said demountable trimmer assembly in operative engagement with said drive extension member;

e. said demountable trimmer assembly including a segment thereof for supporting said trimmer cutter assembly at a location laterally spaced from said drive member and said second housing segment said array of cutter teeth extending in a direction parallel to the length of said trimmer housing;

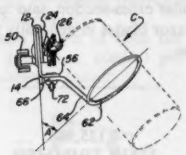
f. said clipper cutter assembly positioned on said second housing segment in operative engagement with said drive member or said trimmer cutter assembly alternatively positioned on said second housing segment, said drive extension member spanning the lateral space between said drive member and said trimmer cutter assembly in operative engagement between said drive member and said trimmer cutter assembly.

4,125,941

CAN OPENER ADAPTER FOR BEVERAGE CANS

Richard V. McKinley, 1168 S. Gilpin, Denver, Colo. 80210

Filed Mar. 16, 1977, Ser. No. 778,130
Int. Cl.[2] B67B 7/30
U.S. Cl. 30—427 **6 Claims**



1. The combination of a can opener and a guide means mounted on said can opener, the can opener having a cutting means and a feeding means drivingly connected, said feeding means having a drive means for rotating the feeding means whereby the top rim of a can can be moved into the cutting means so that the top can be severed and removed, the guide means being arranged to properly position the can with respect to the cutting and feeding means, wherein the improvement in said guide means is an attachment which allows removal of the tops of beverage-type cans, the attachment comprises

a. position means sized to generally fit the outside diameter of a beverage-type can,

b. support means having one end fixedly attached to said position means,

c. removable mounting means at the opposite end of said support means from said position means, said mounting means being removably mounted on a portion of said can opener whereby said position means is held rigidly with respect to said cutting and feeding means, said position means being positioned in proper location to hold and guide the beverage can during the removal of the top so that the severed edge of said can is crimped to prevent a user from being injured by the edge,

d. said position means when the attachment is mounted on said can opener being tilted to form an angle with a plane through the body of said can opener so that the longitudinal axis of a can is tilted with the bottom portion inclined outwardly from the plane through said body, and

e. said position means is also arranged to form an angle with a transverse plane through the cutting and feeding means, said transverse plane being normal to the can opener plane, said position means being arranged so that the longitudinal axis of the can is also positioned with the bottom portion positioned to one side of the transverse plane so that a relief angle is provided as the can top is moved into said cutting means.

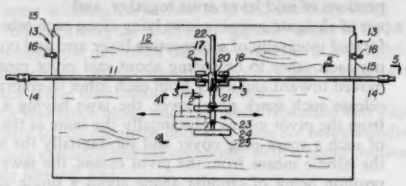
4,125,942

GUIDE FOR HAND TOOLS

Ralph J. Horner, 1690 Broadway, San Francisco, Calif. 94107, and Dwight W. King, 419 Lloyd Ave., San Leandro, Calif. 94578

Filed Feb. 9, 1977, Ser. No. 766,987
Int. Cl.[2] B43L 5/00
U.S. Cl. 33—76 R **6 Claims**

1. Guide means for hand tools used on a flat workpiece comprising a guide rod adapted to be fixed over the working surface of the workpiece, clamp means for clamping the rod onto the workpiece, said clamp means having an angle bar to fit against the top and one edge of said workpiece, attachment means to attach said angle bar to said guide rod so that said angle bar is below the level of said guide rod and a clamp on said angle bar to clamp said angle bar to said workpiece, a guide carriage slideably disposed on the rod and having a transverse member, a short rod slideably disposed on the guide carriage by the transverse member thereof, and a secondary



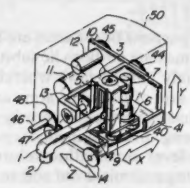
clamp affixed to the end of the short rod for clamping of the hand tool, whereby a hand tool can be clamped onto the end of the short rod and moved along a straight line at a distance from the guide.

4,125,943

METHOD AND APPARATUS FOR DETECTING THE SHAPES OF WELD BEADS

Shimon Ando, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 23, 1977, Ser. No. 771,247
Claims priority, application Japan, Feb. 24, 1976, 51-18449
Int. Cl.[2] G01B 7/28
U.S. Cl. 33—174 P **8 Claims**



1. A method for detecting the shapes of weld beads in a multi-layer padding weld comprising the steps of:

moving a sensor in a scanning motion in a direction perpendicular to a line of the weld bead, said sensor generating an output signal in accordance with the distance between the sensor and an object being detected;

detecting the unevenness of the weld bead in terms of a change of the output signal of the sensor caused by a change in said distance between the sensor and the surface of the weld bead in the line of scanning;

determining when the distance detected by said sensor becomes great enough that said sensor is no longer substantially influenced by small changes in said distance; and

adjusting said distance between the sensor and the object being detected so that the sensor is again influenced by changes in said distance.

5. An apparatus for detecting the shapes of grooves and weld beads comprising:

a sensor for generating an output signal proportional to the distance between the sensor and a workpiece thereof;

means for driving said sensor in the direction perpendicular to a weld line and in the direction of the height of the workpiece respectively;

means for generating signals indicating the positions of the sensor in the X- and Y-directions respectively;

means for storing the X- and Y-direction position signals from said signal generating means and the output signal representing the distance detected by said sensor; and

means for computing the shapes of weld beads on the basis of the contents of said storing means and commanding the X- and Y-direction driving means to move the sensor to commanded positions wherein said computing means includes means for determining when the distance de-

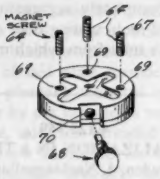
tected by said sensor becomes great enough that said sensor is no longer substantially influenced by small changes in said distance and for commanding said driving means to move said sensor in relation to the workpiece so that said sensor is once again influenced by small changes in said distance.

4,125,944

LEVEL FOR POWER HAND DRILL

Philip Esposito, and George Spector, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Aug. 10, 1976, Ser. No. 713,097
Int. Cl.[2] G01C *9/28*
U.S. Cl. 33—347 **2 Claims**



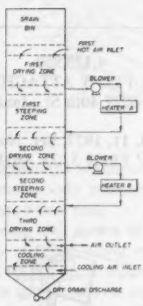
1. In a pocket level, the combination of a main body, a depression upon an upper side, a transparent, hollow glass in said depression, a liquid and an air bubble sealed inside said glass, said depression and said glass each being of cross-shape having arms at right angle, said arms of said glass being slightly curved so that a center of said crossing arms is highest, and a permanent magnet secured to an underside of said main body wherein said main body and magnet have three, threaded openings therethrough vertically a screw in each said opening, and a magnet secured on the lower end of each said screw.

4,125,945

MULTIPLE STAGE GRAIN DRYER WITH INTERMEDIATE STEEPING

Christianus M. T. Westelaken, St. Marys, Canada, assignor to Westlake Agricultural Engineering, Inc., St. Marys, Canada

Filed May 18, 1977, Ser. No. 798,129
Int. Cl.[2] F26B *19/00, 17/12*
U.S. Cl. 34—65 **13 Claims**



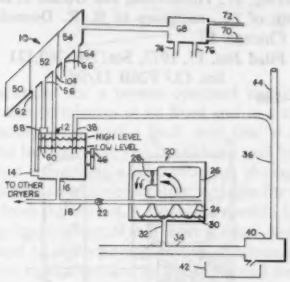
1. A grain dryer comprising a tower with side walls, a top and a bottom, said tower having a wet grain receiving bin at the top, said bin having a first drying floor assembly extending across between the side walls of the tower, said floor assembly having a plurality of substantially uniformly spaced openings with a wet grain delivery tube member fixed beneath each said opening, each said tube member serving to deliver wet grain in response to gravity from said receiving bin into a first drying chamber located in the tower beneath said first floor assembly, a first heated air inlet adjacent said tube members adapted to deliver heated air into the spaces between said tube members and downwardly through a bed of grain in said first drying chamber, first exhaust ducts extending across said tower at the bottom of said first drying zone to receive and exhaust air flowing from said first heated air inlet through said bed of grain in a concurrent direction to grain flow, a steeping chamber located in the tower beneath said first exhaust ducts to allow the moisture profile in the individual kernels of grain to equalize, said steeping chamber having a floor consisting of a second drying floor assembly, a second heated air inlet adjacent the tube members of said second floor assembly and adapted to deliver heated air into the spaces between said tube members and downwardly through a bed of grain in a second drying chamber beneath said second floor, cooling air inlet ducts extending across the bottom of said second drying chamber for directing cooling air upwardly through the bed of grain, exhaust ducts extending across said second chamber intermediate said hot and cooling air inlet ducts to receive and exhaust air flowing from said second heated air inlet in a concurrent direction to grain flow and to receive and exhaust cooling air flowing from said cooling air inlet ducts in a countercurrent direction to grain flow, means for providing hot air to said hot air inlets and cooling air to said cooling air inlets and means for collecting dried grain from said second drying chamber and discharging the grain at a controlled rate.

4,125,946

APPARATUS FOR DRYING CLOTHES USING SOLAR ENERGY

Melvin Prager, 619 NE. 28th St., Ft. Lauderdale, Fla. 33334

Filed Jun. 14, 1977, Ser. No. 806,349
Int. Cl.[2] F26B *19/00;* **F24J** *3/02*
U.S. Cl. 34—80 **26 Claims**



1. Apparatus for drying laundered clothes comprising:
(a) a desiccant,
(b) means for regenerating said desiccant,
(c) said regenerating means comprising solar collecting means,
(d) storage means for said desiccant having
(i) first inlet means for dilute desiccant
(ii) second inlet means for providing concentrated desiccant from said regenerating means to said storage means,
(e) clothes drying means comprising:
(i) receiving means for concentrated desiccant and
(ii) outlet means for dilute desiccant,
(f) desiccant return means receiving dilute desiccant from said drying means and providing dilute desiccant to said first inlet means of said storage means, and
(g) means within said clothes drying means for circulating a first fluid for drying said laundered clothes utilizing said concentrated desiccant.

4,125,947

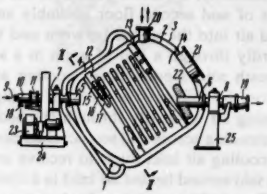
DRIER FOR BULK MATERIAL

Vasily V. Mamistov, ulitsa Mayakovskogo, 13, kv. 50, Khimki Moskovskoi oblasti; Alexandr A. Koryagin, Severny bulvar, 17, kv. 64, Moscow; Vladimir P. Burov, ulitsa Garibaldi, 30, korpus, 3, kv. 47, Moscow; Vladimir F. Denisov, Pervy Likhachevsky pereulok, 2, kv. 45, Moscow, and Vasily T. Balashov, ulitsa Taininskaya, 20, kv. 57, Moscow, all of U.S.S.R.

Filed Jun. 2, 1977, Ser. No. 803,119

Int. Cl.[2] F26B *11/02*

U.S. Cl. 34—108 **2 Claims**



1. A drier for bulk material comprising a hollow cylindrical casing arranged at an angle to the horizontal axis of its rotation; double walls of said hollow cylindrical casing forming a space for the passage of a heat carrier; manifolds serving to admit and discharge the heat carrier, each being attached with only one of its ends inside a space formed by the internal wall of said hollow cylindrical casing; tubular components made in the form of coils each bent into a helix of suitable shape, coaxially located relative to one another around the longitudinal axis of the casing and connected with their ends to the respective said manifolds admitting the heat carrier thereinto and discharging same therefrom.

4,125,948

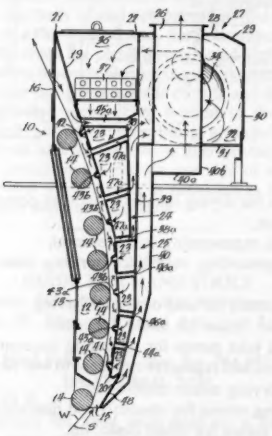
DRYER FOR PRINTED WEBS

Henry H. Hering, Jr., Homewood, and Gerald J. Bender, Park Forest, both of Ill., assignors to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Jan. 17, 1977, Ser. No. 760,121

Int. Cl.[2] F26B *13/04*

U.S. Cl. 34—160 **9 Claims**



4. In a dryer for a freshly printed web which includes a housing having a web inlet slot at an upstream end and a web outlet slot at a downstream end remote from said upstream end, air being free to enter the housing through both said slots, web guide means in the housing upon which a freshly printed web issuing from a high speed rotary printing press traverses the housing from said inlet slot through said outlet slot, and an air circulating system which includes a series of air nozzles in and along the housing directed toward said web surface, the improvement comprising, in combination:

air delivery duct means including a blower to deliver heated air through all the air nozzles in said series;

recirculating duct means which receives air entering the housing through the web outlet slot and spent air from a nozzle of said series which is near said outlet slot and returns it to said blower;

exhaust duct means which receives air entering the housing through the web inlet slot and spent air from a nozzle of said series which is near said inlet slot and exhausts it from the housing;

partition means completely segregating said exhaust duct means from said recirculating duct means; and an adjustable make-up air inlet from which make-up air enters the blower.

4,125,949

COMPARTMENTALIZATION IN A TREATMENT ROOM

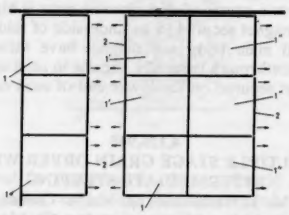
Jacobus J. W. Lestraden, 4, Nachtegaallaan, Sassenheim, Netherlands

Filed Mar. 3, 1977, Ser. No. 773,972

Claims priority, application Netherlands, Mar. 4, 1976, 7602243

Int. Cl.[2] F26B *25/06;* **F25D** *17/06*

U.S. Cl. 34—231 **5 Claims**



5. A room as defined in claim 3 wherein said wall is at least large enough so as to make the stacks accessible to a fork lift truck.

4,125,950

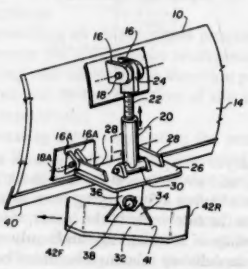
SNOW PLOW ATTACHMENT

Donald R. Mashford, 5027 40th St., Innisfail, Alberta, Canada (T0M 1A0)

Filed Jul. 11, 1977, Ser. No. 814,753

Int. Cl.[2] E01H *5/00;* **A01B** *15/00*

U.S. Cl. 37—41 **3 Claims**



1. A device adapted to be attached to a vehicle for plowing

snow on gravel covered roads while minimizing loss of gravel caused by plowing, said device comprising

a curved elongated blade having a concave plowing front surface and a convex rear surface,

a horizontal foot disposed below the blade and adapted to rest on the top of the gravel covering; and

means securing said foot to said blade in such manner that the bottom edge of the blade is disposed above the foot, said means being manually adjustable to adjust the vertical separation between the bottom edge of the blade and the bottom surface of the foot to a distance at which the gravel will not be removed and the snow can be suitably plowed when the device is used on a vehicle, while restraining rotation of the foot in a horizontal plane with respect to said blade, in which

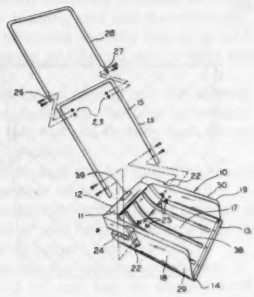
said means comprise a plate member fixed to a pair of spaced parallel arms each of which is pivotally mounted to the rear section of said blade, with the foot pivotally mounted to the underside of said plate member and with a first threaded member pivotally mounted to the underside of said plate member by pin and clevis means so as to pivot in a vertical plane, said first threaded member matingly engaged by its screw thread to the screw thread of a second threaded member pivotally mounted to the rear section of the blade, said pair of spaced parallel arms located to restrain rotational torque of the plate member and a foot in horizontal plane with relation to an attached blade.

4,125,951

SNOW REMOVAL DEVICE

Arthur W. Huerth, Lake Zurich, Ill., assignor to Chicago Etching Corporation, Chicago, Ill.

Filed May 9, 1977, Ser. No. 795,198
Int. Cl.[2] E01H *5/02*
U.S. Cl. 37—53 **22 Claims**



1. A snow removal apparatus which comprises:

a substantially flat main body member of molded plastic arching upwardly at a first end;

a plurality of raised side wall means of molded plastic each of which is rigidly attached along one side of said main body member to provide rigid support to said apparatus while increasing its snow removal capacity;

blade means fixidly attached to the leading edge of said main body member at a second end;

handle means fixedly attached to each of said raised side wall means for facilitating the propulsion of said snow removal apparatus;

said handle means further comprising one or more integrated grooves recessed into each of said raised side walls for increased handling of said apparatus and handle member means attachable to said apparatus through telescopic receipt by said grooves and affixed thereto by handle retention means;

a substantially smooth horizontal bottom surface member across the exterior of said main body member;

said smooth horizontal bottom surface member enabling said device to be slid pavement in a horizontal position;

said smooth horizontal bottom surface member gradually curving upwardly proximate to said first end of said main body member to allow controlled gradual tilting of said apparatus through said handle means;

each of said side wall means and said main body member being independently formed of said plastic material and attached to one another through a second and third series of interlocking tab means,

said second series of interlocking tab means integrally formed into each of said plurality of side walls means,

said third series of interlocking tab means integrally formed on each side of said main body means;

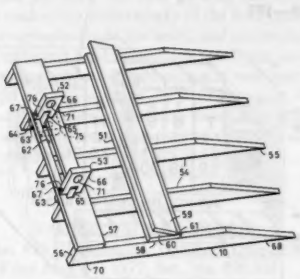
said second and third interlocking tab means merging together to restrainably affix said side wall means to said main body means through the positive locking and interaction of tabs emanating therefrom.

4,125,952

BUCKET ATTACHMENT

Willie L. Jennings, Rt. 1, Box 163, Morriston, Fla. 32668

Filed Oct. 13, 1977, Ser. No. 841,891
Int. Cl.[2] B66F *9/00*; E02F *3/70*
U.S. Cl. 37—117.5 **7 Claims**



1. An attachment for a power operated bucket having a bottom wall that terminates at its front end in a transversely extending leading edge, and a back wall that is rearwardly offset from the leading edge and rises above said bottom wall, said attachment comprising a rigid structure having slot forming means adapted to receive said leading edge for suspending the sructure from the bucket, a front end portion for supporting a working load in front of said leading edge, and a rear end portion adapted to underlie said bottom wall; and means for connecting the rigid structure to the back wall comprising a pair of transversely spaced apart hinge components that are secured to said rear end portion, each of said components having a hinge plate that is movable between a generally upright position and a horizontal position and means for fastening the hinge plate to the back wall at its upright position.

4,125,953

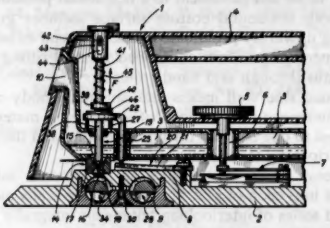
STEAM IRON

Ambrogio Colombo, Monza, Italy, assignor to Fibelco N.V., Willemstad, Netherlands

Filed Jul. 14, 1977, Ser. No. 815,682
Claims priority, application Italy, Jul. 15, 1976, 25333 A/76
Int. Cl.[2] D06F *75/06, 75/18*
U.S. Cl. 38—77.7 **7 Claims**

1. A steam iron comprising a heating plate including a steam generating chamber, a reservoir for water, said steam generating chamber being spaced from and connected to said water reservoir, valve means regulating the connection between said chamber and said reservoir, thermostatic means for controlling the degree of opening of said valve means, said steam generat-

ing chamber having an annular shape with at least one steam discharge outlet at the center thereof, scraping means contained in said annular chamber and adapted to contact the inner



walls of said annular chamber and to be moved by the steam which is generated for removing scale deposited within said annular chamber.

4,125,954

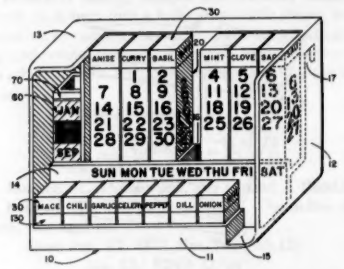
SPICE RACK CALENDAR

Joseph J. Barbieri, 1177 W. Olive #2, Sunnyvale, Calif. 94086

Continuation-in-part of Ser. No. 703,835, Jul. 9, 1976. This application Oct. 20, 1977, Ser. No. 841,456

Int. Cl.[2] G09D *3/02*

U.S. Cl. 40—107 **5 Claims**



1. A combination spice rack calendar comprising a self-standing spice rack receptacle having auxiliary wall mounting means associated therewith; seven hollow columnar rectangular prisms each having calendar day indicia on plural sides thereof whereby said prisms may be interchangeably arranged to display day indicia of a given month of the year; each said prism further comprising an airtight cap associated therewith whereby said prisms may function as spice canisters; said cap also comprising a rectangular prism and having indicia relating to contents on plural sides thereof; an indicator capsule comprising a rectangular prism including month indicia on plural sides thereof and means associated therewith to identify the given month, being displayed; said receptacle further comprising a retaining wall member having day of the week indicia thereon and functioning to retain said seven calendar canister prisms and said indicator capsule in said receptacle.

4,125,955

STERN FISHING SYSTEM

Mario J. Puretic, 259 6th Ave. North, Tierra Verde, Fla. 33715

Filed Apr. 4, 1977, Ser. No. 784,278

Int. Cl.[2] A01K *73/00*

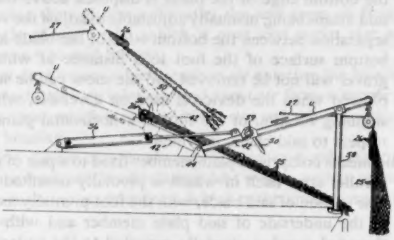
U.S. Cl. 43—8 **9 Claims**

1. Stern fishing apparatus for use with a fishing boat having a stern ramp, a power block and a purse seine net provided with a purse line and purse rings and bridles, said apparatus comprising:

a purse ring grabber carried on said boat adjacent the stern ramp for fore and aft swinging movement between a forwardly extending position and a rearwardly extending position;

a plurality of purse ring-receiving prongs mounted upon the intermediate portion of said grabber;

power-operated means to swing said grabber between its said two positions; and



purse ring-receiving blocks secured to the distal end of said grabber, with said purse rings being disposed aft of said prongs when said grabber is in its rearwardly extending position, and with said rings moving above and forwardly of said prongs as said grabber is swung to its forwardly extending position, whereby said rings may be abutted with said prongs to temporarily retain said ring bridles to said grabber as said power block retrieves said net aboard said boat.

4,125,956

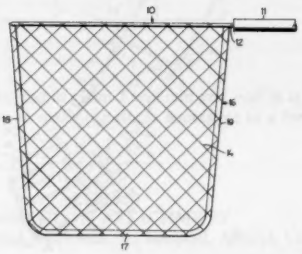
DIP NET FOR FISH AND THE LIKE

Henry E. Killian, Anniston, Ala., assignor to Whale Enterprises, Inc., Piedmont, Ala.

Filed Feb. 10, 1977, Ser. No. 767,563

Int. Cl.[2] A01K *77/00*

U.S. Cl. 43—11 **1 Claim**



1. A dip net comprising:

(a) a net carrying member embodying a loop-like member carried by one end of an elongated handle,

(b) an open-ended net having its open end secured to said loop-like member with the other end being closed and projecting laterally therefrom,

(c) a generally U-shaped member having a base portion engaging said closed end of said net and having legs extending from said base portion toward said loop-like member and terminating in free ends,

(d) a first generally U-shaped notch in one said free end of said U-shaped member in position to receive a portion of said loop-like member opposite the handle, said first notch having an axis extending transversely to the longitudinal extent of said U-shaped member,

(e) a second generally U-shaped notch in the other free end of said U-shaped member, said second notch having an axis extending parallel to the longitudinal extent of said U-shaped member, and

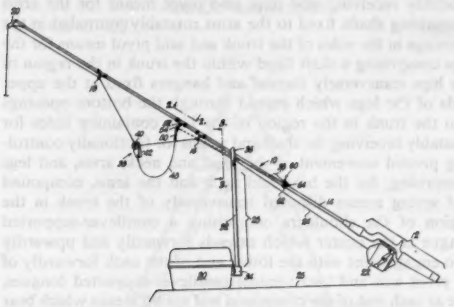
(f) a pin-like member carried by the end of said handle adjacent said loop-like member in position to engage said second U-shaped notch in said other free end of said U-shaped member.

4,125,957

FISHING ROD HOLDER AND INDICATOR ASSEMBLY

James C. Cunningham, 2413 W. 25th St., Topeka, Kans. 66611

Filed Nov. 14, 1977, Ser. No. 850,952
Int. Cl.[2] A01K *93/00*
U.S. Cl. 43—17 **10 Claims**



1. In combination with fishing appartus of the type having a length of line baited at one end thereof and confined for movement along a rod member for manipulating said line, an indicator assembly for signalling a fish bite on said line comprising:

weight means releasably attached to a portion of said line along said rod and functioning under gravity influence to urge stretches of said line adjacent said portions thereof away from said rod whereby to produce a section of slack in said line along said rod,

said weight means including structure defining a line guiding opening for training said line therethrough,

parts of said structure slidably engaging said line portions and functioning to suspend said weight means from said line;

shiftable tether means having one end thereof connected to said weight means for limiting movement of the latter away from said rod and thereby limit the amount of slack in said slack section;

means secured on said rod for mounting the opposite end of said tether means on said rod,

said weight means functioning in the absence of a fish bite at said one end of said line to maintain a generally constant elevation with respect to said rod,

said weight means functioning in response to a fish bite on said one end of said line to sharply shift in elevation whereby to signal the existence of said bite; and

keeper means spaced from said mounting means along said rod and secured to the latter for releasably holding said weight means in a nonuse position when said weight means is detached from said line, whereby to allow manipulation of said line without interference therewith by said weight means.

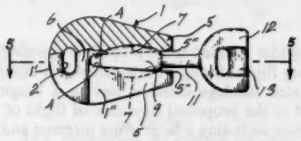
4,125,958

TENSION RELEASE COUPLING FOR FISHING LINE

Bernard Côté, 12770 St. Evariste St., Montreal, Canada

Filed Mar. 10, 1977, Ser. No. 776,220
Claims priority, application United Kingdom, Jun. 25, 1976, 26490/76
Int. Cl.[2] A01K *91/00*
U.S. Cl. 43—43.12 **5 Claims**

1. A tension release coupling assembly adaptable for a fishing line having a cord and a fishhook assembly, and comprising a resilient coupling member attachable to the cord and a connector member which is part of the fishhook assembly and releasably coupling with the coupling member, said coupling member consisting of a one piece body of resilient plastic and non compressible material, said body being elongated, having opposite sides and two opposite ends, and having a slot extending longitudinally thereof from one end towards but short of the other end, said slot opening at said opposite sides and at said one end and defining two elongated arms spaced from each other and integrally interconnected by a transverse bight portion at said other end, said transverse bight portion having a hole made therethrough for connection to said cord, said arms tapering in the direction of their free ends, having substantially flat internal surfaces facing each other and defining the side surfaces of such slot, each internal surface having a



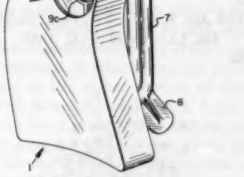
depression therein, the two depressions being in register transversely of the body, said depressions cooperatively forming a cavity with said slot, the free outer ends of said arms being each provided with a guiding notch extending at least partially in said internal surfaces, the two guiding notches being in register with each other transversely of the body and with said depressions longitudinally of the body, said connector member including an enlarged head removably insertable into said slot by movement along the longitudinal axis of said body by being guided by said guiding notches upon engagement therewith, said movement continuing until said head fully engages said depressions, said head having an external surface, complementary to said cavity.

4,125,959

SOAP BUBBLE BLOWERS

Yarik Markiw, 415 W. Burnside, Portland, Oreg. 97209

Filed May 26, 1977, Ser. No. 800,938
Int. Cl.[2] A63H *33/28*
U.S. Cl. 46—6 **1 Claim**



1. A soap bubble blower comprising a soap solution reservoir, a reciprocating bubble wand or the like mounted on a yoke communicating with flexible tubing which hangs on a pivot carried in said reservoir, said flexible tubing communicating with rigid tubing forming inlet and outlet parts, a valve consisting of said flexible tubing, yoke, and bubble wand such that said valve is closed when said flexible tubing rests on said pivot, but open when subject to air pressure, so that said bubble wand is drawn out of the soap solution and stop opposite said outlet, at the same time forming soap bubbles, said flexible tubing being distended by a venturi in said outlet, said valve closing and coming to rest upon said pivot when no longer subject to air pressure, said bubble wand at the same time drawn into said soap solution.

4,125,960
TOY GLIDER

Charles R. Bacca, 2250 Williamsburg-Batavia Pk., Batavia, Ohio 45103

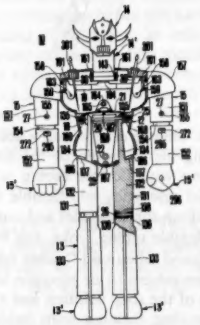
Filed May 31, 1977, Ser. No. 801,520
Int. Cl.[2] A63H *27/14*
U.S. Cl. 46—79 7 Claims

1. A toy glider adapted to be propelled upwardly for subsequent soaring flight through the atmosphere, comprising:
an elongated fuselage member having a longitudinal axis parallel to the propelled direction of flight of the glider,
a tail section including a large wing member and a fin member both mounted on the fuselage,
an airflow sensor flap hinged to the fin member,
a stop on the forward part of the fuselage member,
a small wing member,
means mounting the small wing member for longitudinal sliding movement on the fuselage member between a glider propelled position adjacent the large wing member and a glider soaring position against the stop,
biasing means continuously urging the small wing member toward its soaring position,
an elastic tether connected to the small wing member and adapted in stretched condition to overcome the biasing means to hold the small wing member in glider launched position adjacent the large wing member,
and detachable means connecting the free end of the tether to the airflow sensor flap,
whereby, upon deceleration of the propelled glider, reduced airflow around the sensor flap allows said flap to swing around its hinge and sever the detachable means causing the small wing member to move forwardly under the influence of the biasing means into its glider soaring position.

4,125,961
DOLL WITH MOVEABLE ARMS, LEGS AND HEAD

Naoharu Yamashina, Tokyo, Japan, assignor to Popy Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1976, Ser. No. 701,563
Int. Cl.[2] A63H *3/00, 3/46*
U.S. Cl. 46—145 4 Claims



1. A doll comprising a trunk defining shoulders, a waist and hips, members simulating a head, neck, arms, legs and feet, said trunk containing at the top an opening for pivotally receiving the neck member, at the opposite sides openings for pivotally receiving the arm members and at the bottom openings for pivotally receiving the leg members, means for pivotally connecting the neck, arms and legs to the interior of the trunk for pivotal movement of said members exclusively about axes transverse to the trunk, said opening at the top being of sufficient size to permit the neck to be rocked forwardly and rearwardly therein and said openings at the bottom being of sufficient size to permit the legs to be moved forwardly and rearwardly, said pivot means for the neck comprising pins fixed to the neck at opposite sides and transversely spaced bearing elements below and at opposite sides of the top opening for rotatably receiving said pins, said pivot means for the arms comprising shafts fixed to the arms rotatably journaled in the openings in the sides of the trunk and said pivot means for the legs comprising a shaft fixed within the trunk in the region of the hips transversely thereof and hangers fixed at the upper ends of the legs which extend through the bottom openings into the trunk in the region of the hips containing holes for rotatably receiving the shaft and means for frictionally controlling pivotal movement of the head and neck, arms, and legs comprising, for the head and neck and the arms, compound leaf spring means disposed transversely of the trunk in the region of the shoulders comprising a cantilever-supported tongue at the center which extends forwardly and upwardly into engagement with the lower end of the neck forwardly of its pivot axis and two vertical cantilever-supported tongues, one at each end of the compound leaf spring means which bear against the arm shafts, and a simple leaf spring means for the legs fixed within the trunk in the region of the hips above the shaft supporting the leg hangers with its ends yieldably pressed against the upper ends of the leg hangers, and wherein the inner ends of the arm shafts and the upper ends of the leg hangers are provided with disk means of larger diameter than the respective shafts with which the spring means frictionally engage sufficiently to restrain free pivotal movement of the arms and legs relative to the trunk.

4,125,962
GRAVITY SWITCH FOR DOLLS

Petra P. Torrejon, and D. Francisco Sanchez Sanchez, both of C/Luis de la Torre, Madrid 18, Spain

Filed May 16, 1977, Ser. No. 797,325
Int. Cl.[2] A63H *33/26*
U.S. Cl. 46—232 4 Claims

1. Gravity switch for a doll, characterized by being formed by two complementary parts, of which one is fixed to an organ of the actual doll and preferably to its head, this part being insulating and having a joint metal element connected by a conductor wire to one of the poles of an electrically driven device, while the second part crosses said first part, and can slide freely with respect to it between two limit positions, represented by a top knob and a lower widening, the second part also being metal, with an insulating casing, and being connected by a second wire to the other pole of the electrically driven device, so that when the metal element of the first part and the second part comes into contact, preferably through the lower widening of the latter, the circuit is closed, and the electrically driven device works, whereas when the said metal element of the first part and the second part are separated

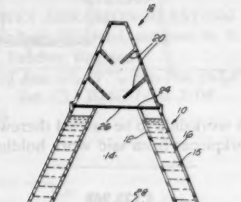
electrically, the circuit remains open and the device does not work.

4,125,963

MEANS FOR AND A METHOD OF CULTIVATING PLANTS

William N. H. Johnson, Barnett House, Barnet Lane, Totteridge, London N20, England

Filed Apr. 13, 1977, Ser. No. 787,083
Int. Cl.[2] A01G *13/00*
U.S. Cl. 47—27 **6 Claims**



1. An apparatus of substantially conical form for use in growing plants from seeds, bulbs, corms or the like, all hereinafter referred to for convenience as "seeds," comprising:

a light transmitting generally impermeable housing of substantially frusto-conical form and comprising an outer frusto-conical wall and a coaxial inner frusto-conical wall;

a reservoir within said housing, for liquid including or consisting of water, said reservoir occupying a relatively small part of said housing and being formed between said inner and outer walls of the housing;

a trap disposed at the top of said housing, said trap including formations to assist the passage of water formed by condensing water vapour in said trap into the part of the interior of said housing below said trap, the latter part of the interior of said housing including a compartment for growth medium, said trap being located above the said reservoir and the said compartment for the growth medium being located beneath the said housing;

means permitting the escape of water vapour from said reservoir into the interior of said housing while preventing the escape of liquid from said reservoir into the housing; and

a membrane permeable to water vapour and separating said trap from said reservoir.

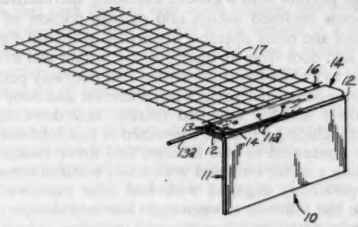
4,125,964

EDGING DEVICE

Donald L. R. Waggoner, 13185 SW. Foothill Dr., Portland, Oreg. 97225

Filed Apr. 19, 1977, Ser. No. 788,777
Int. Cl.[2] A01G *1/08*
U.S. Cl. 47—33 **5 Claims**

1. A lawn edging device, adapted for insertion into the soil at the edge of a lawn, comprising a vertical, bendable metallic plate in rectangular form, a horizontal lip formed at the top of said plate, said lip having a beaded edge which terminates as a U-shaped portion, said U-shaped portion providing securement means, a wire mesh horizontally secured in said securement means, said wire mesh having a size through which grass will grow, and rod means secured within said lip bead, said rod



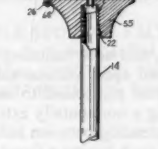
means providing interconnecting means for a plurality of substantially identical lawn edging devices.

4,125,965

ALL PURPOSE FLOWER STAND

Walter C. G. Schweim, R.R. #3, Box 450, Mankato, Minn. 56001

Filed Jul. 11, 1977, Ser. No. 814,754
Int. Cl.[2] A47G *7/00*
U.S. Cl. 47—39 **2 Claims**



1. A flower stand comprising

a vertical hollow post having a top threaded end and mounted on a base at its opposed bottom end,

a hollow open container threadably mounted to said top threaded end of said post,

said container fitted with a bottom enclosed first chamber separated from a second chamber open to the top of the container by a perforated plate, said enclosed first chamber fitted with tubular means to add water to the said enclosed first chamber and with drain means to drain the chamber as desired, in which the open top end of a hollow tube extends to the upper section of the enclosed first chamber and is spaced a distance from the perforated plate, so as to serve as an overflow drain, with the interior of said tube joined to the interior of the post, and with a first wick mounted in the first enclosed chamber about said hollow tube and of a length so as to extend through perforations in the plate to the second chamber.

4,125,966

ELECTRIC SECURITY DOOR AND UNITIZED FRAME

Robert E. Penn, R.R. 4, Rockville, Ind. 47872

Filed Jan. 18, 1978, Ser. No. 870,342
Int. Cl.[2] E05F *11/38*
U.S. Cl. 49—378 **2 Claims**

1. A construction installable in a building having interior and exterior side-by-side walls comprising:

a single unitized structure including a front wall, back wall, top and bottom walls and a pair of end walls integrally joined together in a box configuration with a doorway portion defining an opening and a storage portion integrally joined together, said storage portion sized to fit

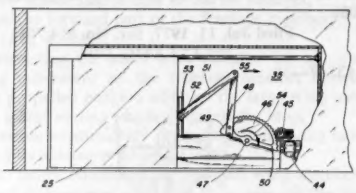
completely between said exterior wall and said interior wall;

a single door slidably mounted to said structure and having an edge portion with a groove extending thereacross;

drive means enclosed within said storage portion of said structure and being operably connected with said door to move said door from an open position within said storage portion to a closed position within said doorway portion, said drive means including a slot frame on said door with a follower slidably mounted therein, said drive means further including a linkage connected to said follower and a gear connected to said linkage, said drive means also including a motor mounted within said unitized structure and operatively engaged with said gear to move said linkage and follower to open and close said door;

guide means within said structure and including at least one rod extending across said doorway portion and into said storage portion and fitting within said groove of said door to guide said door as said door slides on said rod as said drive means opens and closes said door;

said unitized structure further including a neck forming a passageway leading into said doorway portion and aligned



with said opening, said neck including a pair of mutually opposed and spaced apart vertical side walls extending perpendicularly from and joined to said front wall with said neck including a horizontally extending ceiling wall and a floor wall extending between and joined to said pair of side walls, said neck having a flared portion extending outwardly from said side walls and ceiling wall in a parallel arrangement with said front wall forming a pocket extending at least partially around said neck to receive said exterior wall, said floor wall extending outwardly of said flared portion and atop ground forming a rain guide and having an outer downwardly sloping edge, said floor wall extending through said neck to said bottom wall being a one-piece construction with a portion of said guide means being provided on said bottom wall;

said pair of side walls being located inwardly of said end walls and being joined thereto by said front wall providing an air-tight and jam-proof seal when said door is in the closed position, one of said end walls together with a portion of said back wall and front wall forming a channel adjacent to but opening in a reverse direction to a portion of said pocket formed by said flared portion, front wall and side wall which is nearest said channel.

4,125,967

INTERFORM GRINDING MACHINE

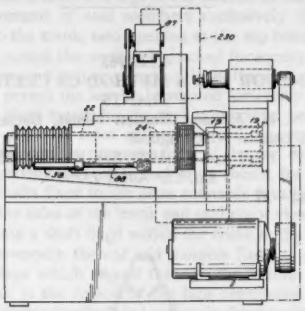
John W. Lovely, and Robert N. Hobbs, both of Springfield, Vt., assignors to Bryant Grinder Corporation, Springfield, Vt.

Division of Ser. No. 645,257, Dec. 29, 1975, Pat. No. 4,023,310. This application Dec. 29, 1976, Ser. No. 755,438

Int. Cl.[2] B24B *7/02, 47/20*

U.S. Cl. 51—105 R **1 Claim**

1. A grinding machine comprising a base, a slidebar mounted on the base, a wheelhead adapted to receive a grinding wheel and mounted on the base, a workslide mounted on the bar for longitudinal and rotational movement with respect thereto, first means for displacing the workslide along the bar, second means for displacing the workslide angularly about the bar, a work holding implement mounted on the workslide adapted to receive workpieces, loader means carried by the workslide for receiving a plurality of workpieces and loading said workpieces into said work holding implement and unloader means



mounted on the workslide to be carried therewith for conveying finished workpieces from said work holding implement.

4,125,968

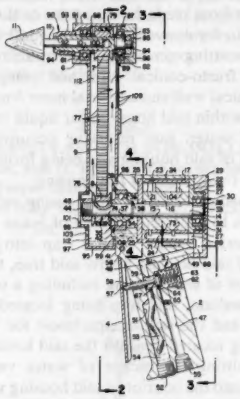
HIGH SPEED GRINDING TOOL

Richard C. Mackey, Painesville, Ohio, assignor to Air Tool Service Company, Willoughby, Ohio

Filed Aug. 10, 1977, Ser. No. 823,224

Int. Cl.[2] B24B *23/00*

U.S. Cl. 51—170 R **4 Claims**



1. In a portable lightweight angle grinder comprising a motor housing, a motor spindle journaled for rotation in said housing, a rotary air motor in said housing having a fixed stator and a rotor within the stator and mounted on said spindle, said air motor having air inlet and exhaust openings and means for supplying compressed air to the inlet openings, manually operated valve means for controlling the flow of air to the air motor, and outer housing spaced from and carried by said motor housing, a work spindle journaled for rotation in said outer housing, means at the end of the work spindle for detachably mounting the shaft of a cutting or grinding tool, and drive means operably connecting said motor spindle to said work spindle to drive the same, the improvement wherein said drive means comprises a pair of wheels of small diameter and a flexible endless band mounted on the wheels to effect rotation of the work spindle at a speed in excess of 20,000 revolutions per minute, said wheels comprise replaceable upper and lower pulleys with external teeth regularly spaced around the periphery, said band comprises a molded belt of elastomeric material having teeth which mesh with the teeth of said pulleys, an

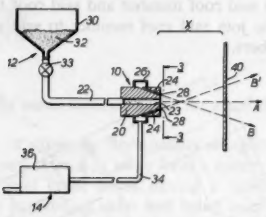
axially elongated tubular extension is provided between said motor housing and said outer housing to support said outer housing, adjustable means are provided for mounting said tubular extension whereby the distance between the motor spindle and the work spindle can be changed to adjust the tension in the belt, said tubular extension is rigidly connected to said outer housing and has a lower end detachably mounted on one end of said motor housing, and screw means for holding said extension in adjusted positions on said motor housing, said tubular extension comprising a muffler housing enclosing said belt and the lower pulley and having a multiplicity of small exhaust openings, said air motor having exhaust passages discharging air to the interior of said muffler housing.

4,125,969

WET ABRASION BLASTING

Neil Easton, Blewbury, England, assignor to A. Long & Company Limited, London, England

Filed Jan. 25, 1977, Ser. No. 762,331
Int. Cl.[2] B24C *1/00, 5/04*
U.S. Cl. 51—320 **11 Claims**



1. A method of blast cleaning comprising

subjecting a work surface to a composite stream of carrier liquid and particulate abrasive material which is soluble in said carrier liquid;

supplying said particulate abrasive material for said stream in a substantially dry state through a central abrasive outlet in jet nozzle means along a first path toward said work surface, and expelling said carrier liquid at high pressure toward said work surface in a plurality of jets directed along further paths from a plurality of liquid outlets disposed in said jet nozzle means radially outwardly of said central abrasive outlet; and

applying said stream from said abrasive and jet nozzle outlets to said work surface as the first surface contacted by said stream downstream of said outlets.

9. A method of blast cleaning comprising

subjecting a work surface to a stream of carrier liquid and particulate abrasive material, wherein said particulate abrasive material comprises abrasive particles which are substantially indissoluble per se in said carrier liquid, but which break down into subparticles partially or completely soluble in said carrier liquid;

supplying said particulate abrasive material for said stream through a central abrasive outlet in jet nozzle means along a first path toward said work surface, and expelling said carrier liquid toward said work surface in a plurality of jets directed along further paths from a plurality of liquid outlets disposed in said jet nozzle means radially outwardly of said central abrasive outlet; and

applying said stream from said abrasive and jet nozzle outlets to said work surface as the first surface contacted by said stream downstream of said outlets.

10. A method of blast cleaning comprising

subjecting a work surface to a stream of carrier liquid and particulate abrasive material, wherein said particulate abrasive material comprises abrasive particles having core portions soluble in said carrier liquid and surface portions soluble in said carrier liquid, the solubility of said core portions in said carrier liquid being greater than the solubility of said surface portions in said carrier liquid;

supplying said particulate abrasive material for said stream through a central abrasive outlet in jet nozzle means along a first path toward said work surface, and expelling said carrier liquid toward said work surface in a plurality of jets directed along further paths from a plurality of liquid outlets disposed in said jet nozzle means radially outwardly of said central abrasive outlet; and

applying said stream from said abrasive and jet nozzle outlets to said work surface as the first surface contacted by said stream downstream of said outlets.

11. A method of blast cleaning comprising

subjecting a work surface to a stream of carrier liquid and particulate abrasive material, wherein said particulate abrasive material comprises crystalline abrasive particles soluble in said carrier liquid, and wherein said crystalline abrasive particles have been surface treated to enhance the rate at which said particles will decompose and dissolve in the liquid carrier decomposition and then baked;

supplying said particulate abrasive material for said stream through a central abrasive outlet in jet nozzle means along a first path toward said work surface, and expelling said carrier liquid toward said work surface in a plurality of jets directed along further paths from a plurality of liquid outlets disposed in said jet nozzle means radially outwardly of said central abrasive outlet; and

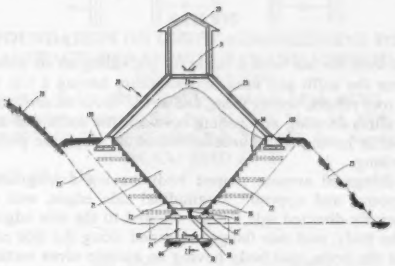
applying said stream from said abrasive and jet nozzle outlets to said work surface as the first surface contacted by said stream downstream of said outlets.

4,125,970

BULK STORAGE FACILITY

Henri C. Vidal, 8 bis Boulevard Maillot, Neuilly (92), France

Filed Jun. 1, 1977, Ser. No. 802,446
Int. Cl.[2] E02D *5/20;* **E04H** *7/26*
U.S. Cl. 52—31 **17 Claims**



11. A storage facility for bulk material comprising:

a pair of spaced apart end walls;

a pair of inclined side walls, convergent in a vertically downward direction, each side wall being inclined relative to a horizontal plane at a predetermined angle exceeding the angle of repose for the bulk material, extending between the pair of endwalls, and including

a plurality of generally rectangular wall panels arranged in a pattern, each panel having

a smooth front face, edge surfaces, and

a rear face,

a gusset integral with the panel, extending from the rear face, having means for attaching each of a plurality of reinforcing strips thereto and including a horizontal edge surface which defines the predetermined acute angle with the front face, and

means extending along the edge surfaces of the panel for cooperating with the corresponding means of an adjacent panel to interlock the panel against rotation about a horizontal and vertical axes,

a plurality of flexible reinforcing members, each reinforcing member being attached to the gusset of

a corresponding wall panel and extending away from the rear face, at least two reinforcing members being provided for each gusset, and

a volume of particulate material surrounding the plurality of reinforcing member, contacting the rear surface, supporting the horizontal edge surface of each wall panel and cooperating with the reinforcing members to establish a cohesive mass;

a tunnel extending between the end walls, positioned below the convergent side walls and having a longitudinal opening size to permit bulk material to pass therethrough;

conveyor means in the tunnel for collecting and removing the bulk material;

cover means in the tunnel for collecting and removing the bulk material; and

means for agitating the particulate material, positioned above the longitudinal opening to cause movement of the bulk material through the longitudinal opening into the tunnel.

4,125,971

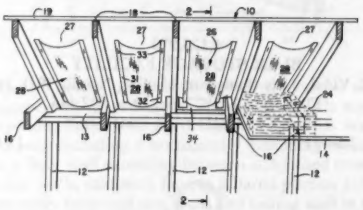
VENT AND BAFFLE

Bruce K. Ward, St. Louis Park, Minn., assignor to Diversified Insulation, Inc., Hamel, Minn.

Filed Sep. 19, 1977, Ser. No. 834,322

Int. Cl.[2] E04B *7/02*

U.S. Cl. 52—92 **27 Claims**



1. A vent for use with a baffle for providing an air passage between the soffit and attic of a structure having a top wall plate, roof rafters, ceiling joists, and a roof cover secured to the roof rafters forming an opening between the soffit and attic, said baffle having a top arcuate recess and top side pockets comprising:

an elongated arcuate shaped body having a longitudinal groove and opposite longitudinal side edges, and outwardly directed side flanges secured to the side edges of the body, said side flanges extended along the side edges of the body, said body having an arcuate cross sectional shape, a portion of said body adapted to fit into the arcuate recess of the baffle and said side flanges adapted to fit into the side pockets whereby when the baffle is located on the top wall plate the baffle holds the side flanges in engagement with the roof cover so that the groove of the body forms with the roof cover an air passage between the soffit and attic.

4,125,972

MONOCOQUE CELL

Paul E. Pate, 3319 Dartmouth, Dallas, Tex. 75205

Continuation of Ser. No. 721,510, Sep. 8, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 862,097

Int. Cl.[2] E04H *1/12;* **E04B** *7/02, 5/48*

U.S. Cl. 52—79.12 **12 Claims**

1. A building structure comprising:

side wall members each having a receiving groove around the periphery thereof;

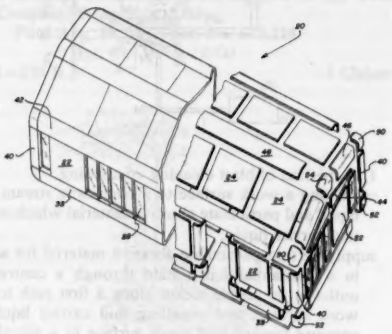
wall joint members having a curved section with a planar portion extending therefrom such that the longitudinal edges of said wall joint members are removed from the curved section thereof, each said joint member having a receiving groove around the perimeter thereof, said receiving groove being shallower than said planar portion such that the innermost portion of said receiving groove is removed from said curved section along the longitudinal edges of said wall joint members;

tongue members for engagement within corresponding grooves in said side wall members and said wall joint members to form an encircling structure of said side wall members interconnected by said wall joint members;

a roof member having a receiving groove around the entire periphery thereof;

roof to wall joint members each having a curved section with planar portions extending therefrom such that the longitudinal edges of said roof to wall joint members are removed from the curved section thereof, each said roof joint member having a receiving groove around the perimeter thereof in said planar portion, said receiving groove being shallower than said planar portion such that the innermost portion of said receiving groove is removed from said curved section along the longitudinal edges of said roof to wall joint members;

tongue members for engagement within corresponding grooves in said roof member and said roof to wall joint members to join said roof member to said roof to wall joint members;



corner members having a curved portion and three planar sections extending therefrom such that the edges of said corner members are removed from the curved portion thereof, said corner members having a receiving groove around the entire periphery thereof, said receiving groove being shallower than said planar portion such that the innermost portion of said receiving groove is removed from said curved portion;

tongue members for engagement within corresponding grooves in said roof to wall joint members and said wall joint members to attach said corner members to corresponding roof to wall joint members and wall joint members;

electrical wiring within said wall members, said wiring terminating at one end in a terminal in said groove around the periphery thereof;

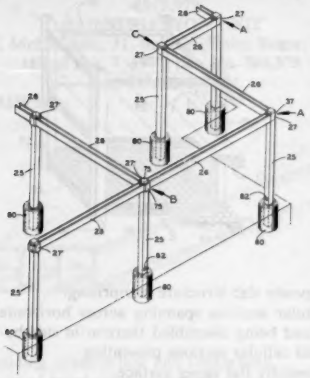
electrical wiring within said wall joint members, said wiring terminating at one end in a terminal in said groove around the periphery thereof; and

electrical wiring positioned within said tongue members, said wiring terminating at the edges of said tongue members at points corresponding to the terminals of said wall members and wall joint members for connecting the wiring between said wall members through said wall joint members such that an electrical wiring circuit is provided from one wall member to another upon assemblage of the wall members and wall joint members.

4,125,973
FORM ASSEMBLY FOR BUILDING FRAMEWORK

George Lendrihas, Hackensack, N.J., assignor to Realsources, Inc., Hackensack, N.J.

Filed Mar. 28, 1977, Ser. No. 781,929
Int. Cl.[2] E04B 7/02, 1/14
U.S. Cl. 52—91 14 Claims



1. In a sheet metal form assembly for a building framework having:

a plurality of adjoining, horizontally elongated, sheet metal beam forms extending away from a corner joint location, each of said beam forms having a closed bottom and opposite upstanding sides and being open at the top to receive poured concrete for filling the interior of the beam form;

a vertically elongated, sheet metal, hollow column form extending down from said corner joint location, said column form having a closed periphery along its vertical length and being open at the top to receive poured concrete for filling the hollow interior of the column form;

the improvement which comprises a sheet metal, hollow, corner joint engaged between and connecting the upper end of the column form and the neighboring ends of the beam forms at said corner joint location, said corner joint having side openings therein which are aligned respectively with the neighboring ends of the beam forms and a bottom opening which is aligned with the upper end of the column form, said corner joint having a top opening and being open at the inside below said top opening between said side and bottom openings for receiving concrete poured down into said top opening, said corner joint having outwardly projecting flanges at the periphery of each of said side and bottom openings which slidably interfit telescopically with the adjacent ends of the ajoining beam forms and the column form, respectively.

4,125,974
CONTROL SYSTEM FOR TELESCOPIC BOOM

Christopher G. Kay, and Robert A. Fritsch, both of Cedar Rapids, Iowa, assignors to Harnischfeger Corporation, W. Milwaukee, Wis.

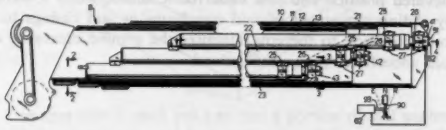
Filed Jul. 8, 1977, Ser. No. 813,798
Int. Cl.[2] E02F 3/00; F15B 11/20
U.S. Cl. 52—115 9 Claims

1. In a crane: a telescopic boom comprising movable boom sections and extendable and retractable hydraulic cylinders for moving said boom sections, each cylinder housing having an extend chamber and a retract chamber therein and an extend passage and a retract passage, respectively, communicating therewith through the piston rod of said cylinder, the retract chamber in one cylinder having a port connected by a flexible hose to the retract passage in another cylinder;

and control means for operating said cylinders and comprising:

a valve assembly mounted on each piston rod and comprising a solenoid valve connected to its associated extend passage and operable for controlling fluid flow in its associated cylinder;

a main control valve operable in one position to connect all the solenoid valves to a pressurized fluid source and to connect the retract passage in said one cylinder to a fluid reservoir, said main control valve being operable in another position to connect all the solenoid valves to said reservoir and to connect the retract passage in said one cylinder to said pressurized fluid source;



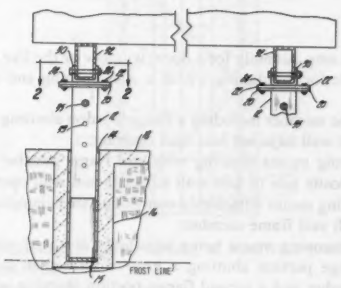
means including a relay switch and a relay, said switch being responsive to operation of said main control valve in either position for operating said relay for simultaneously controlling operation of all solenoid valves to thereby effect simultaneous movement of all said boom sections;

and a plurality of selector switches, each independently operable to control one of said solenoid valves and operable when said main control valve is operated simultaneously therewith in either position to effect operation of said relay switch to thereby prevent operation of the other of said solenoid valves by said relay in response to operation of said relay switch by said main control valve, and to thereby effect independent movement of its associated boom section.

4,125,975
FOUNDATION ON GRADE ARRANGEMENT FOR MANUFACTURED STRUCTURES AND METHOD OF INSTALLATION

Bernard D. Soble, 19151 Berkley, Detroit, Mich. 48221

Continuation-in-part of Ser. No. 556,969, Mar. 10, 1975, Pat. No. 4,007,568. This application Feb. 14, 1977, Ser. No. 768,634
Int. Cl.[2] E04D 15/00
U.S. Cl. 52—126 5 Claims



1. A foundation arrangement for application to structures having an underframe support, the foundation including: a plurality of telescoping stanchions; means for connecting an upper end of each of said telescoping stanchions to said structure underframe, said means comprising a bracket plate, a U-shaped bracket secured to said bracket plate, a second mounting plate; means adjustably mounting said bracket plate to said second mounting plate; means connecting said second

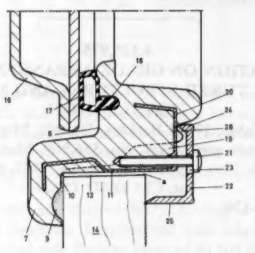
mounting plate to said stanchion member, whereby said U-shaped bracket may be laterally adjusted with respect to said stanchion to compensate for mispositioning of said underframe and said telescoping stanchion; a plurality of casing means for receiving and guiding each of said telescoping stanchions, said telescoping stanchions being freely slideable in said casings, and said casing means accommodating vertical elevational movement of said telescoping stanchion during installation procedures; foundation means for supporting each of said casing means with respect to the ground; lateral stabilization means enabling each of said casing means to receive a respective one of said plurality of telescoping stanchion means and to maintain vertical alignment thereof, whereby said telescoping stanchions may be secured to said structure underframe in an elevated position and said underframe subsequently lowered by sliding movement of said stanchions in said casings to a lower position to thereby minimize the ground clearance of said underframe above the ground.

4,125,976

WINDOW OR DOOR FRAME

Karl I. Carlsson, and Sven T. Akesson, both of Tidaholm, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Mar. 30, 1977, Ser. No. 782,686
Claims priority, application Sweden, Apr. 5, 1976, 7603971
Int. Cl.[2] E06B *1/04*
U.S. Cl. 52—217 **10 Claims**



1. A frame assembly for a door, window or the like which is adaptable for installation within a wall opening and comprising:

a frame member including a flange portion abutting a side of said wall adjacent said wall opening;

clamping means abutting both said frame member and the opposite side of said wall adjacent said wall opening;

fastening means detachably connecting said clamping means with said frame member;

said clamping means being adjustably disposed with a first flange portion abutting a groove formed in said frame member and a second flange portion abutting said opposite side of said wall adjacent said wall opening to clamp said frame member within a wall opening wider than said frame member; and

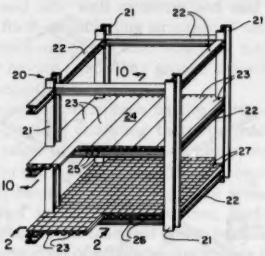
said clamping means being further adjustably disposed with said first flange portion abutting said opposite side of said wall adjacent said wall opening and said second flange portion abutting said groove in said frame member to clamp said frame member within a wall opening narrower than said frame member.

4,125,977

INTERNALLY COMPOSITE CELLULAR SECTION AND COMPOSITE SLAB ASSEMBLED THEREFROM

John J. Michlovic, McMurray, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Oct. 19, 1976, Ser. No. 733,864
Int. Cl.[2] E04F *17/08*
U.S. Cl. 52—220 **17 Claims**



1. A composite slab structure comprising:

metal cellular sections spanning across horizontal support beams and being assembled thereon in side-by-side relation, said cellular sections presenting

a substantially flat upper surface,

plural spaced-apart longitudinal cells extending below said flat upper surface, said cells being substantially imperforate in the region below said flat upper surface, and

plural spaced portions disposed along said cells to interrupt the interior surfaces thereof from a normal planar surface; and

concrete substantially entirely filling certain of said longitudinal cells and engaging and conforming with said spaced portions, whereby said concrete is extended out of its normal plane in the region of said spaced portions and thereby achieves a positive mechanical combination with said cellular section;

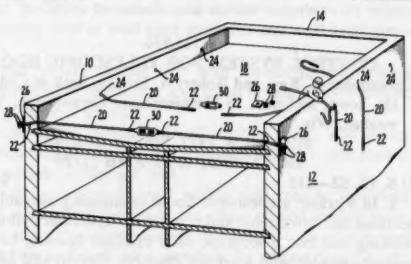
the flat upper surface of each metal cellular section being provided with access openings for access to the interiors of said longitudinal cells, said access openings facilitating securement of said metal cellular sections to said horizontal support beams and facilitating the introduction of wet concrete into said longitudinal cells.

4,125,978

PARAPET REINFORCEMENT SYSTEM FOR BUILDINGS

Adam T. Schildge, Jr., 899 Green St., San Francisco, Calif. 94133

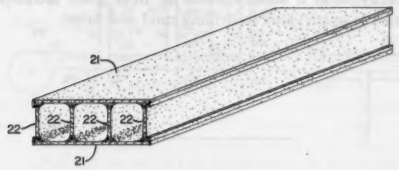
Filed Sep. 9, 1977, Ser. No. 831,999
Int. Cl.[2] E04C *3/10*; E04H *9/02*
U.S. Cl. 52—223 R **7 Claims**



1. In a building comprising at least two pairs of opposed wall members and a floor disposed between the wall members and

connected thereto, a method for supporting and reinforcing the wall members, said method comprising tying each pair of opposed wall members together independent of the floor so as to tie the wall members together to inhibit outward destructive movement of the wall members and separation thereof from the floor under the influence of earthquake force conditions.

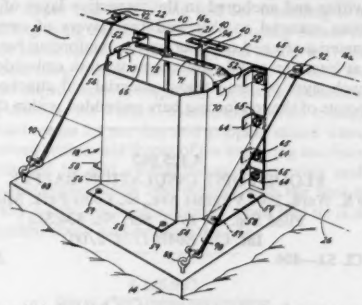
4,125,979
CONSTRUCTION UNIT
Robert R. McLaughlin, Jl. Baranangirang, Bogor, Indonesia
Filed Feb. 7, 1977, Ser. No. 766,375
Int. Cl.[2] E04B *5/04*
U.S. Cl. 52—259 **1 Claim**



1. A building construction unit comprising
(a) A pair of equal sized preformed elongated cementitious flanges, each having a straight major axis and a constant cross section normal thereto;
(b) a plurality of equal sized preformed elongated cementitious webs each having a straight major axis and a constant cross section normal therto;
(c) each of said cementitious flanges and webs having internal reinforcing means;
(d) a plurality of elongated reinforcing rods;
(e) a plurality of equal sized spacer/connectors each having a flat surface for contacting the inner surface of a flange, an aperture for fitting over the edge of a web and additional apertures to receive the reinforcing rods;
(f) said elongated cementitious flanges having their major axes parallel to each other and their major planes parallel to each other;
(g) said elongated cementitious webs having their major axes parallel to each other and to the major axes of said flanges and their major planes parallel to each other;
(h) said webs having said spacer/connectors attached at intervals over both edges of their length;
(i) said spacer/connectors receiving and holding said reinforcing rods;
(j) said inner surface of said flanges adhesively joined to the flat surfaces of said spacer/connectors; and,
(k) continuous prisms of cementing material along the junction between the flanges and the webs, enclosing said spacer/connectors and said reinforcing rods and providing structural strength to said building unit.

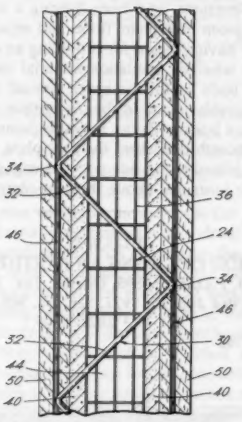
4,125,980
FOUNDATION, METHOD OF CONSTRUCTING SAME AND PARTS USEABLE THEREIN
Robert V. Miraldi, 240 Gregory Ct., Moorestown, N.J. 08057
Filed Dec. 30, 1976, Ser. No. 755,732
Int. Cl.[2] E02D *27/00*
U.S. Cl. 52—293 **27 Claims**

1. A method of constructing a foundation for a pre-engineered building, the method comprising:
providing footings at spaced-apart locations along a perimeter corresponding to the perimeter of the building to be erected;
setting light weight precast reinforced concrete grade beams between said footings with the ends of each grade beam bearing on adjacent footings;
positioning a light weight generally U-shaped form having a pair of parallel legs, a transverse leg and flap means on each footing and securing said flap means to at least one grade beam and its associated footing whereby said form is secured to at least one grade beam and said associated footing;
placing a yoke across the top of each form and suspending an



anchor bolt in each yoke so that a portion of said anchor bolt extends into said form and a threaded portion of said bolt extends above said form; and placing wet concrete into each of said forms to provide a pier securing said grade beam on said associated footing when said concrete hardens.

4,125,981
REINFORCED STRUCTURES
Colin J. MacLeod, Glasgow, Scotland, and Leonard R. Creasy, Epson, England, assignors to Caledonian Moroccan Construction Ltd. S.A., Tangier, Morocco
Filed May 12, 1977, Ser. No. 796,420
Claims priority, application United Kingdom, May 14, 1976, 20117/76; Nov. 3, 1976, 45768/76
Int. Cl.[2] E04C *2/26*
U.S. Cl. 52—309.12 **13 Claims**



1. A building structure having at least one exterior wall which comprises
(a) spaced shuttering sheets
(b) a cavity defined between said spaced apart shuttering sheets,
(c) two layers of cementitious material which have been formed by spraying said cementitious material against said shuttering sheets,
(d) a number of upright beams spaced from one another and each comprising one or more zig-zag reinforcing bars extending in a generally upright direction and spanning the cavity, each upright beam additionally including an

upright column of metal mesh folded to give a rectangular horizontal cross-section, that column acting as a spacer between said shuttering sheets to define said cavity,

(e) said reinforcing bars having points of the zig-zags extending through the respective shuttering sheet and embedded within and anchored to the respective layer of cementitious material so that said two layers of cementitious material are tied together by the reinforcing bars, and

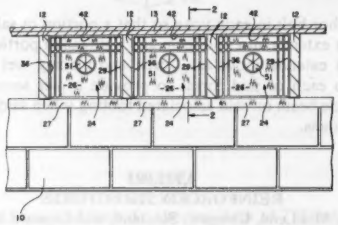
(f) at least one metal reinforcement mesh embedded within each layer of cementitious material and attached to said points of the reinforcing bars embedded within that layer.

4,125,982

FLOOR JOIST INSULATION BAFFLE

Bruce K. Ward, 2904 Virginia Ave., St. Louis Park, Minn. 55426

Filed Sep. 19, 1977, Ser. No. 834,321
Int. Cl.[2] E04B *1/74, 2/00*
U.S. Cl. 52—404 **22 Claims**



1. A baffle locatable between a base plate on top of a basement wall, floor and floor joists supported on the base plate of a structure for retaining insulation material in the space between adjacent floor joists and above the base plate comprising:

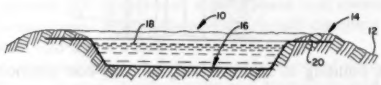
a generally flat body having a top portion, a bottom portion and side portions, said body having a size to close the space between base plate, floor, and adjacent floor joists, said body having means for providing an opening through the body whereby insulation material can be placed behind the body to fill the space behind the body, a first flange movably joined to the top portion engageable with the floor, a bottom flange movably joined to the bottom portion locatable adjacent the base plate, and side flanges movably joined to the side portions engageable with adjacent floor joists and above the base plate.

4,125,983

METHOD OF LINING AN EARTHEN TANK

Hal K. Jarrell, P.O. Box 4595, Odessa, Tex. 79760

Filed Jun. 20, 1977, Ser. No. 808,032
Int. Cl.[2] E02B *5/00*
U.S. Cl. 52—742 **10 Claims**



1. Method of lining an earthen tank with a unitary membrane comprising the steps of:

laying down sheets of paper to form a backing for one of a multiplicity of panels;

laying down a plurality of sheets of fiber glass material on said backing with adjacent longitudinal edges of the sheets contacting each other;

impregnating the fiber glass material with polyester resin thereby bonding the material to the paper;

reinforcing the adjacent marginal edges of the sheets of fiber glass with an overlay of fiber glass material and impregnating the overlay with polyester resin;

curing the panel and thereafter rolling the panel into a cylinder;

transporting a multiplicity of the cylinders to an earthen tank;

unrolling the panels while overlapping the marginal edges thereof and temporarily fastening the overlapping edges together;

bonding the panels together by applying a strip of fiber glass material impregnated with polyester resin at said overlap;

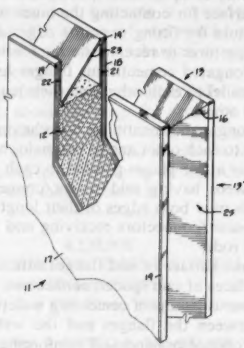
continuing to add additional panels to cover to bottom and sidewalls of the earthen tank until the tank is completely lines with the panels each being bonded to one another to thereby form a unitary build up fiber glass membrane which is impervious to drilling mud and brine.

4,125,984

BUILDING PANEL CONSTRUCTION AND CONNECTOR THEREFOR

Gerald L. Jonas, 2217 Pacific Ave. #4, San Francisco, Calif. 94115

Filed Mar. 11, 1977, Ser. No. 776,721
Int. Cl.[2] E04B *2/28;* E04C *2/34*
U.S. Cl. 52—809 **8 Claims**



1. In a panel structure including an insulational and structural core laminated between skin members, the improvement comprising frame members surrounding said core, said frame members having a generally Z-shaped cross-section including first and second, substantially planar, leg portions connected by a web portion, and wherein one leg portion and the web portion define a wedge shaped space opening to the interior of said panel and the other leg portion and the web portion define a second wedge shaped space opening to the exterior of said panel;

wherein one of said first and second leg portions is free of a protrusion;

wherein said skins are laminated to outer surfaces of said leg portions of the frame members; and

wherein said Z-shaped frame members are sufficiently resilient such that the distance between the first and second leg portions can be varied to accommodate variations in the thickness of said core.

4,125,985

PROCESS FOR FORMING PEELABLE SEALS

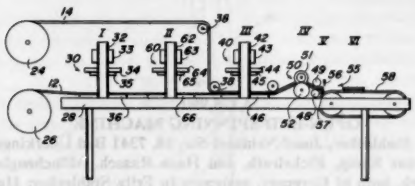
Louis L. Laske, Grays Lake, Ill., assignor to Vonco Products, Inc., Lake Villa, Ill.

Continuation-in-part of Ser. No. 641,151, Dec. 15, 1975, Pat. No. 4,055,454, which is a continuation-in-part of Ser. No. 499,621, Aug. 22, 1974, Pat. No. 3,926,311. This application Sep. 14, 1977, Ser. No. 833,036

The portion of the term of this patent subsequent to Dec. 16, 1992, has been disclaimed.

Int. Cl.[2] B65B 7/02, 51/10

U.S. Cl. 53—452 14 Claims



1. A method for forming peelable seals between uncoated spunbonded olefin sheet material and a synthetic polymeric thermoplastic sheet material while maintaining a substantial portion of said spunbonded olefin sheet untreated and breathable comprising; modifying the surface of the spunbonded olefin sheet in the area of the desired peelable seal by pretreatment with heat and pressure to substantially reduce high spots and internal weaknesses to render the sealing area susceptible to having said synthetic polymeric thermoplastic material peelably joined thereto in said pretreated area by conventional heat-pressure sealing, and peelably sealing said pretreated spunbonded olefin sheet to said synthetic polymeric thermoplastic sheet material by conventional heat-pressure sealing only in said pretreated area, said heat pretreatment raising the temperature of said olefin sheet material adjacent a heating means to about 255° to about 330° F.

13. The method of claim 1 wherein the product to be packaged is placed within the pretreated area and said sealing of said pretreated spunbonded olefin to said synthetic polymeric thermoplastic material by conventional heat-pressure sealing seals said product within a peel-seal container.

4,125,986

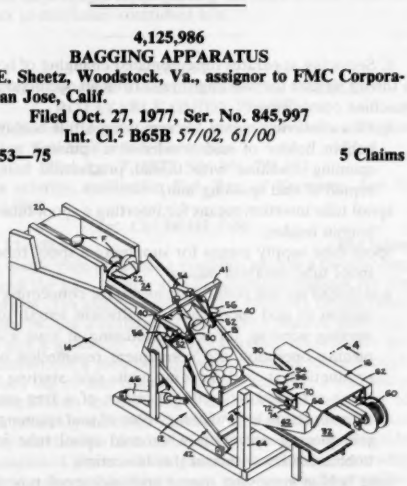
BAGGING APPARATUS

Charles E. Sheetz, Woodstock, Va., assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 27, 1977, Ser. No. 845,997

Int. Cl.[2] B65B 57/02, 61/00

U.S. Cl. 53—75 5 Claims



1. In a bagging apparatus comprising means for filling a predetermined quantity of loose fruit into a bag at a filling station, gripping means for holding the upper end of the bag in an open condition while the bag is filled, means for moving said grippng means and a filled bag carried thereby from said filling station to a bag tying station upon the conclusion of the filling operation, an automatic bag tying machine at said bag tying station, said bag tying machine having a throat for receiving the upper end of the bag and for bunching it into a neck, said bag tying machine further including means for securing a tie about said neck of the bag, and means for releasing said bag from the gripping means after said tie has been applied thereto, the improvement comprising means for mounting said bag tying machine for vertical movement, switch means activated by said means for moving said gripping means when said bag is received within said throat of the bag tying machine, and means activated by said switch means for moving said bag tying machine downwardly into contact with the fruit in the bag whereby a tight package is formed when said tie is subsequently applied about said neck of the bag.

4,125,987

ROW CROP HARVESTER

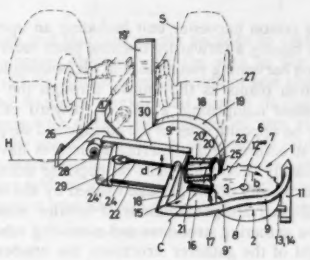
Bernard Krone, Spelle, and Wilhelm Ahler, Stadtlohn, both of Germany, assignors to Maschinenfabriken Bernard Krone GmbH, Spelle, Germany

Filed Oct. 1, 1976, Ser. No. 728,772

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1975, 2544200

Int. Cl.[2] A01D 45/02

U.S. Cl. 56—13.3 8 Claims



1. A machine for cutting and chopping of crops with stalks which is adapted to be pulled in a direction of travel by a tractor or the like over the ground on which the crop with stalks to be harvested is located, comprising in combination,

a guide casing having vertical wall means;

a cylindrical drum rotatably mounted on the guide casing about a substantially vertical axis, said drum having gripper teeth extending from its periphery; the direction of travel of the drum corresponding to the twelve o'clock position on the drum, a first portion of said vertical wall means extending substantially parallel to the cylindrical surface of the drum at a distance therefrom from its 3-o'clock position to its 8-o'clock position and defining therewith a pulling in passage for the crop to be harvested, a second portion of said vertical wall means merging with said first portion and forming a feed trough which extends substantially tangentially with respect to said drum;

a chaff blower having an inlet is operatively mounted contiguous to said feed trough;

a pair of feed rollers are operatively mounted on said guide casing immediately upstream of said inlet of said chaff blower;

cutting means are connected to said first portion of said vertical wall means and extend into said pulling in passage;

whereby the stalks of the crop are adapted to be seized by the gripper teeth of the drum and transported into said pulling in passage in said cutting means where the stalks are cut off and thereafter the cut stalks are transported to

the feed trough while assuming a progressive rearwardly inclined attitude with respect to the direction of travel of the machine.

4,125,988

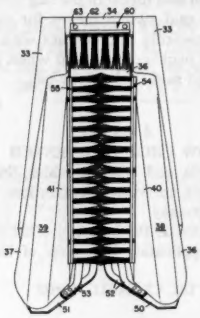
COTTON HARVESTER

Francis E. Schlueter, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 12, 1977, Ser. No. 796,268

Int. Cl.[2] A01D *46/08*

U.S. Cl. 56—30 **4 Claims**



1. In a cotton harvester unit including an upright housing structure having a forwardly opening plant receiving passage and cotton harvesting mechanism in the housing for separating cotton from plants as they move through the passage, the improvement comprising: a pair of forward crop gathering structure on opposite sides of the passage and supported on the housing structure, said gathering structures having opposed and forwardly diverging walls on opposite sides of and projecting forwardly of the passage formed by the housing; transersely aligned upright columns of bristles mounted on the respective gathering structures and extending substantially the full height of the gatherer structures, the bristles of said columns being generally horizontal and converging inwardly and rearwardly to free ends that are closely adjacent to one another so as to close the mouth of said passage.

4,125,989

METHOD AND APPARATUS FOR TREATMENT OF PIECED PLACES IN A YARN

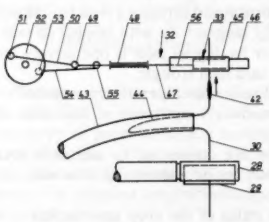
Fritz Stahlecker, Josef-Neidhart-Str. 18, 7341 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Sussen, both of Germany

Filed May 2, 1977, Ser. No. 792,582

Claims priority, application Fed. Rep. of Germany, May 11, 1976, 2620811

Int. Cl.[2] D01H *15/00*

U.S. Cl. 57—263 **33 Claims**



15. Apparatus for treating pieced places in a yarn, especially the pieced places of yarn produced on open end spinning machines, comprising:

drawing means for drawing off yarn from a spinning assembly, and

mechanical compacting means for compacting the pieced places during drawing off of yarn from the spinning assembly.

4,125,990

OPEN-END SPINNING MACHINE

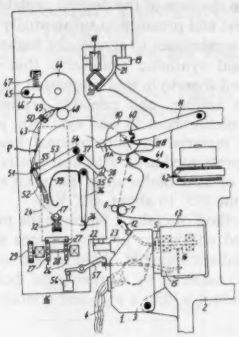
Fritz Stahlecker, Josef-Neidhart-Str. 18, 7341 Bad Überkingen; Heinz Kamp, Rickelrath, and Hans Raasch, Mönchengladbach, both of Germany, assignors to Fritz Stahlecker; Hans Stahlecker and W. Schlafhorst & Co., all of, Germany

Filed Feb. 17, 1976, Ser. No. 658,532

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1975, 2506362

Int. Cl.[2] D01H *9/00, 15/00;* **B65H** *54/26*

U.S. Cl. 57—263 **79 Claims**



1. Servicing apparatus for automated changing of bobbins in a thread winder for winding thread from an open-end spinning machine comprising:

bobbin removing means for removing a full bobbin from a bobbin holder of said winder at a spinning unit of the spinning machine with thread production being interrupted at said spinning unit,

spool tube insertion means for inserting a spool tube into the bobbin holder,

spool tube supply means for supplying a spool tube to said spool tube insertion means,

and thread section connecting means for connecting a thread section to said spool tube of sufficient length to form a starting winding for accommodating at least a one-time piecing operation and consequent resumption of thread production at said spinning unit, said starting winding being arranged to facilitate return of a free end of the thread section to a spinning rotor of said spinning unit for said piecing operation when said spool tube is in said bobbin holder with said thread section,

said bobbin removing means and said spool tube insertion means being carried on a mobile servicing carriage which is selectively movable to respective bobbin exchange positions adjacent respective spinning units of the spinning machine.

4,125,991
MOBILE SERVICING DEVICE FOR AN OPEN END SPINNING FRAME

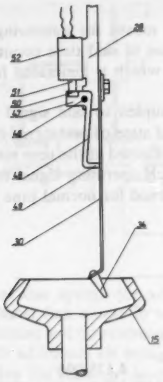
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7341 Bad Überkingen, Germany, assignor to Hans Stahlecker and Fritz Stahlecker, both of, Germany

Continuation-in-part of Ser. No. 798,380, May 19, 1977. This application Jun. 14, 1977, Ser. No. 806,524

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1976, 2629161

Int. Cl.[2] D01H *11/00*

U.S. Cl. 57—302 **27 Claims**



1. Cleaning apparatus for cleaning spinning rotors of open end spinning assemblies comprising:

at least one cleaning element means for cleaning a spinning rotor,

drive means for drivingly moving said cleaning elements means to excecute rotor cleaning motions,

spring member means interconnecting said cleaning element means and said drive means while permitting adjusting movement of said cleaning element means in a direction radial to the rotor rotational axis of a spinning rotor being cleaned,

and an electrically controlled setting device for effecting radial adjustment of said spring member means with respect to said rotor rotational axis.

4,125,992
TWO FOR ONE TWISTER HAVING FREELY ROTATABLE GUIDE PLATE

Jürgen Kallmann, Kaarst, Germany, assignor to Palitex Project Company GmbH, Krefeld, Germany

Filed Apr. 7, 1977, Ser. No. 785,542

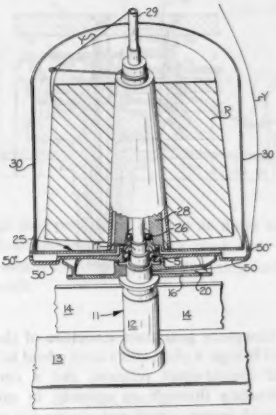
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2614962

Int. Cl.[2] D01H *7/86*

U.S. Cl. 57—58.83 **10 Claims**

1. In a textile yarn processing machine, such as a two-for-one twister and the like, having spindle assembly stations for the processing of yarn and each including a rotatably driven rotor mechanism having a horizontally-extending reserve yarn storage disc and a generally vertically-extending hollow axle defining therewithin a yarn passageway extending therethrough and radially out of said reserve yarn storage disc, a stationary carrier mechanism for carrying a hollow supply package of yarn and rotatably mounted on said rotor mechanism so that said rotor mechanism rotates relative thereto, a yarn guide eyelet positioned above and in generally axial alignment with said hollow axle, and a driven yarn take-up winding mechanism, so that the yarn may be withdrawn from the yarn supply package by said winding mechanism and pass through said yarn passageway and through said eyelet to said winding mechanism to form a rotating balloon of yarn between said eyelet and said storage disc and around said carrier mechanism and the supply package as a result of the rotation of said rotor mechanism; the improvement of:

a freely-rotatable, generally horizontally-extending plate means unattached to said yarn storage disc and being positioned between said reserve yarn storage disc and yarn guide eyelet within the balloon of yarn formed therebetween and being of a greater diameter than said carrier



mechanism and the yarn supply package to substantially prevent contact therewith by the yarn in the rotating balloon and for allowing free rotation of said plate means by sliding frictional engagement around its outside circumference with the rotating balloon of yarn at a speed less than the speed of rotation of said reserve yarn storage disc to reduce windage loss by and power consumption for driving said rotor mechanism which occurs when said plate means is attached to said reserve yarn storage disc.

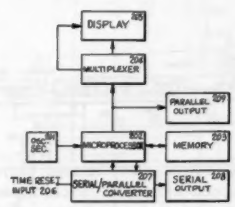
4,125,993
DIGITAL DISPLAY DEVICES WITH REMOTE UPDATING

Philip Emile, Jr., 14 Eisenhower Pkwy., Roseland, N.Y. 07068

Filed Jul. 2, 1976, Ser. No. 702,034

Int. Cl.[2] G04C *3/00, 13/04;* **H04M** *15/38*

U.S. Cl. 58—23 R **8 Claims**



DIGITAL DISPLAY TIMEPIECE WITH REMOTE UPDATING

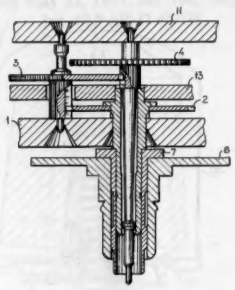
1. In a digital display device having a display multiplexer and microprocessor means for controlling and updating the display, the improvement comprising: oscillator means and memory means whereby said oscillator means periodically interrupts the microprocessor means to update data stored in the said memory means and thereafter said microprocessor means operates the display multiplexer from said data in said memory means until further interruption from said oscillator means.

4,125,994

TRAIN STRUCTURE OF A TIMEPIECE

Yasuichi Nakagawa; Masataka Ikenishi; Shozo Kushida, and Hirokazu Tsukutani, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Oct. 6, 1976, Ser. No. 730,206
Claims priority, application Japan, Oct. 7, 1975, 50-137100
Int. Cl.[2] G04B *33/10*
U.S. Cl. 58—59 3 Claims



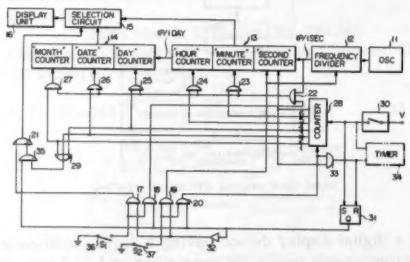
1. In a timepiece gear train structure of the type having a third wheel bridge, a plate and a date wheel holder disposed in superposed spaced-apart relation; and a center wheel and pinion extending through an opening in said plate: means mounting said center wheel and pinion for rotational movement comprising the portion of said plate which defines said opening for rotatably supporting an intermediate part of said center wheel and pinion; and means for rotatably supporting the lower part of said center wheel and pinion on said date wheel holder comprising a cannon pinion disposed over and connected to the exterior portion of said lower part of said center wheel and pinion, an hour wheel disposed on the exterior portion of said cannon pinion, and a bush disposed around the exterior of said hour wheel and being fixed on said date wheel holder.

4,125,995

ELECTRONIC TIMEPIECE

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1977, Ser. No. 787,150
Claims priority, application Japan, Apr. 13, 1976, 51-41633
Int. Cl.[2] G04B *27/00*
U.S. Cl. 58—855 20 Claims



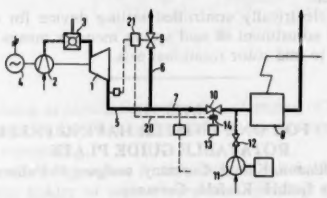
1. An electronic timepiece comprising:
means for receiving a battery,
a time count circuit for counting reference clock signals from an oscillator,
a display unit coupled to said time count circuit for displaying the contents of the time count circuit,
switching means for controlling a time counting function except for a time setting function performed by said time count circuit,
means for generating a battery set signal indicative of an initial state in which a battery is set into said battery receiving means of the timepiece,
means coupled to said battery set signal generating means for holding the battery set signal from the battery set signal generating means,
means coupled to said signal holding means for designating a switching from a switch operation signal of said switching means to a signal for a time count function control when an output signal is generated from said signal holding means,
time count setting means for delivering as a count value control instruction to said time count circuit the switch operating signal which is generated from said switching means, and
releasing means coupled to said signal holding means for releasing the hold state of said signal holding means after a time setting is effected at the time setting means and for causing the switch operating signal from said switching means to be returned for normal time function control.

4,125,996

PROTECTIVE DEVICE FOR A WASTE-GAS CHANNEL OF A GAS TURBINE IN A COMBINED GAS TURBINE-STEAM POWER PLANT

Otto Schmoch, Mulheim, Ruhr, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim,Ruhr, Germany

Filed Mar. 7, 1977, Ser. No. 775,381
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1976, 2609522
Int. Cl.[2] F02C *7/02*
U.S. Cl. 60—39.09 R 4 Claims



1. Safety device for a waste-gas channel of a gas turbine in a combined gas turbine-steam power plant, the waste-gas channel having a waste-gas bypass line as well as a waste-gas branch line to a steam generator, comprising a bypass flap disposed in the bypass line and a waste-gas flap disposed in the branch line, both said flaps being openable and closable in opposition to one another, said waste-gas flap having means for checking the flow of waste-gas, means for free-wheeling mounting said waste-gas flap, and motor means for driving said waste-gas flap beyond a range of the end positions thereof so that, at the beginning of closing movement of said by pass flap, said waste-gas flap is drivable from the closed position thereof by said motor means until the friction of said closed position thereof is overcome, means for signaling to said bypass flap partial opening of said waste-gas flap so as only then to effect complete closing of said bypass flap, means for automatically further opening said waste-gas flap in response to increasing gas pressure in said waste-gas branch line and being retainable by said motor means in open position of the waste-gas flap.

4,125,997

AIR DISTRIBUTION SYSTEM FOR REDUCTION CATALYST AND OXIDATION CATALYST

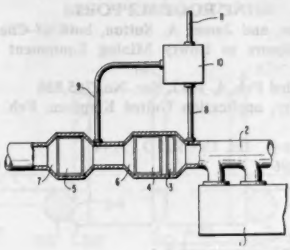
Jörg Abthoff, Plüderhausen; Hans-Dieter Schuster, Grossheppach, and Reiner Kreeb, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 19, 1974, Ser. No. 490,106

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1973, 2337228

Int. Cl.[2] F01N *3/15*

U.S. Cl. 60—289 **13 Claims**



1. An exhaust gas line system for an internal combustion engine with an exhaust line means in which are arranged a reduction catalyst means and downstream thereof an oxidation catalyst means, with additional air being fed to the reduction catalyst means during the starting phase of the internal combustion engine and to the oxidation catalyst means during the hot running condition of the internal combustion engine, means for feeding a portion of the additional air fed to the reduction catalyst means also in the hot-running condition of the internal combustion engine in amounts between about 3 and about 20% of the entire additional air, and an oxidation catalyst means of relatively small volume being arranged in the exhaust line means upstream of the reduction catalyst means, the additional air fed to the reduction means also flowing through the oxidation catalyst means of small volume with a line for the additional air which bifurcates into two further lines, of which one leads to the reduction catalyst means and the other to the oxidation catalyst means, and which includes a three-way valve means in the bifurcation, characterized in that the valve means in a first end position opens the further line to the reduction catalyst means and closes the further line to the oxidation catalyst means and in the second end position opens the further line to the oxidation catalyst means and keeps the further line to the reduction catalyst means open with an opening cross section that is relatively small in relation to the opening cross section of the further line leading to the oxidation catalyst means.

4,125,998

DEVICE FOR IGNITING FUEL INJECTED INTO A RAPIDLY FLOWING GASEOUS MEDIUM

Ernest J. Barou, Le Mee sur Seine; Roland Beyler, Levallois-Perret; Marc F. B. Buisson, Le Mee sur Seine; Jacques E. J. Caruel, Dammarie les Lys, and Roger A. J. Vandenbroucke, Antony, all of France, assignors to Societe Nationale et de Construction de Moteurs d'Aviation, Paris, France

Filed May 5, 1977, Ser. No. 794,242

Claims priority, application France, May 13, 1976, 76 14364

Int. Cl.[2] F02C *7/22*; F02K *3/10*

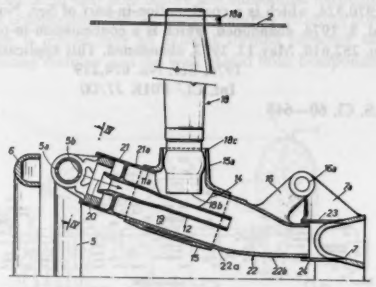
U.S. Cl. 60—261 **3 Claims**

1. A device for igniting fuel injected into a rapidly flowing stream of a gaseous comburent medium wherein an enclosure with an open upstream end and a spark plug is positioned to ignite fuel in said enclosure, the improvement comprising:

a perforated grid spanning said open upstream end;

injecting means for injecting fuel into said stream adjacent said open upstream end whereby a carbureted mixture enters said enclosure through said grid;

a tubular conduit extending from adjacent said upstream



end, through said perforated grid to an inner end in said enclosure downstream of said spark plug; and

said injecting means including means directing fuel into said tubular conduit.

4,125,999

METHODS OF SUPERCHARGING A DIESEL ENGINE, IN SUPERCHARGED DIESEL ENGINES, AND IN SUPERCHARGING UNITS FOR DIESEL ENGINES

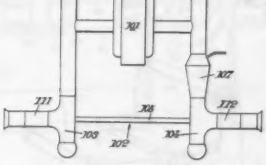
Jean F. Melchior, Neuilly-sur-Seine, France, assignor to Etat Francais, Paris, France

Division of Ser. No. 437,748, Jan. 29, 1974, Pat. No. 3,988,894, which is a continuation-in-part of Ser. No. 384,566, Aug. 1, 1973, abandoned, which is a continuation of Ser. No. 139,080, Apr. 30, 1971, abandoned. This application Sep. 8, 1976, Ser. No. 721,576

Claims priority, application France, Apr. 6, 1972, 72.12113; Mar. 21, 1973, 73.10041

Int. Cl.[2] F02B *37/00, 37/08*

U.S. Cl. 60—606 **18 Claims**



1. Supercharged internal combustion engine comprising a turbo-compressor unit with at least one compressor and at least one turbine, a bypass pipe having an upstream part and a downstream part, said bypass pipe providing direct and automatically permanent passage for the air delivered through the compressor to the exhaust gases, and automatic throttle means operable in said bypass pipe to effect a variable passage cross section therein and arranged so as to be traversed by the air passing through the bypass pipe for automatically generating between the upstream and downstream parts of the bypass pipe a pressure difference which is an increasing function of the pressure existing in the upstream part and which pressure difference is approximately independent of the flow-rate of air traversing said throttle means.

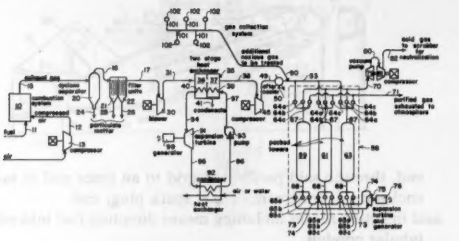
4,126,000
SYSTEM FOR TREATING AND RECOVERING ENERGY FROM EXHAUST GASES

Harald F. Funk, 68 Elm St., Murray Hill, N.J. 07974

Continuation-in-part of Ser. No. 565,045, Apr. 4, 1975, Pat. No. 3,970,524, which is a continuation-in-part of Ser. No. 486,562, Jul. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 252,610, May 12, 1972, abandoned. This application Apr. 6, 1976, Ser. No. 674,219

Int. Cl.[2] F01K *21/00*

U.S. Cl. 60—648 23 Claims



1. A method of treating hot exhaust gas, comprising the steps of:

(a) removing particulate matter from the gas;

(b) productively reclaiming a portion of the heat energy of the hot gas by passing the hot gas in indirect heat exchange relationship with a fluid to concurrently cool the gas and heat the fluid;

(c) further cooling the gas to effect a separation of harmful, less volatile components from more volatile components;

(d) compressing the gas at some time prior to the completion of step (c);

(e) discharging the more volatile components to atmosphere; and

(f) neutralizing the less volatile components.

4,126,001
METHOD FOR CONSTRUCTING A SOIL STRUCTURE

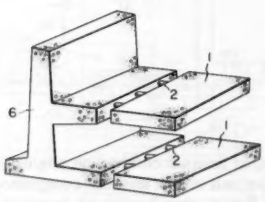
Yoshiharu Shimada; Manao Suzuki, both of Tokyo, and Masaru Hoshiya, Hiratsuka, all of Japan, assignors to Kyokado Engineering Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1976, Ser. No. 747,903

Claims priority, application Japan, Dec. 9, 1975, 50-145892

Int. Cl.[2] E02D *17/00*

U.S. Cl. 405—287 10 Claims



1. In a method for constructing a soil structure comprising the step of disposing reinforcements into the ground to thereby reinforce the soil structure by frictional forces between the reinforcements and the soil particles, an improvement wherein

the reinforcements are of rigid structure which possess a property of flexibility at least at the time of the disposition of said reinforcements, the frictional forces occurring between said rigid structure and soil particles, to thereby reinforce the soil structure,

laying the reinforcements down on the ground and banking soil on the reinforcements, said reinforcements being adapted for injection of material therein and composed of rigid members and flexible tension members connecting said rigid members,

injecting a hardener into said flexible tension members to harden the latter members, thereby providing the reinforcements with rigid structure in the ground,

said flexible tension members constitute flexible pipes connecting said rigid members, and

said pipes having holes thereon for injecting the hardener around said pipes.

4,126,002
MINE ROOF SUPPORT

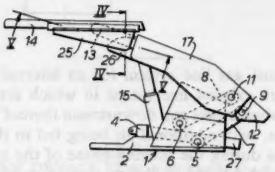
John H. Walker, and James A. Sutton, both of Cheltenham, England, assignors to Dowty Mining Equipment Limited, England

Filed Feb. 4, 1977, Ser. No. 765,856

Claims priority, application United Kingdom, Feb. 6, 1976, 4687/76

Int. Cl.[2] E21D *15/44*

U.S. Cl. 405—296 8 Claims



1. A mine roof support comprising a floor-engaging member, a roof-engaging canopy adjustable in height above the floor-engaging member, a shield pivotally mounted on the floor-engaging member and pivotally supporting the canopy, a flap pivotally mounted on the canopy, a sealing member pivotally mounted on the flap, a side shield slidable beyond one edge of the shield and engaging the sealing member, and a common power operated means to urge both the side shield and the sealing member outwardly.

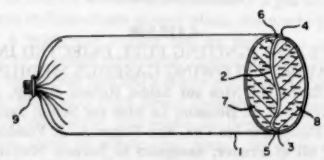
4,126,003
INORGANIC CEMENT GROUTING SYSTEM FOR USE IN ANCHORING A BOLT IN A HOLE

Ernst A. Tomic, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 6, 1977, Ser. No. 830,476

Int. Cl.[2] E21D *20/02;* C04B *7/02*

U.S. Cl. 405—261 5 Claims



1. In a grouting system for use in a hole in combination with a reinforcing member wherein a hardened grout is formed around the reinforcing member in the hole by the reaction of at least two mixed components of an inorganic grouting composition, thereby anchoring the reinforcing member in the hole, a first component of the inorganic grouting composition comprising a slush of a particulate inorganic cement that sets by hydration and a liquid which is nonreactive therewith, a second component, separated from the first, comprising water,

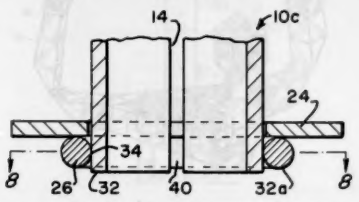
and a particulate aggregate being present in one or both of the components, the improvement comprising, as the inorganic cement, a cement containing, by weight, about from 20 to 40 percent of $3CaO.3Al_2O_3.CaSO_4$ and about from 10 to 35 percent of chemically unbound $CaSO_4$, the remainder being substantially β-$2CaO.SiO_2$.

4,126,004

FRICTION ROCK STABILIZER

Herman Lindeboom, Ringoes, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Aug. 4, 1977, Ser. No. 821,738
Int. Cl.[2] E21D *21/00, 20/00*
U.S. Cl. 405—259 **12 Claims**



1. An improved friction rock stabilizer for forced insertion thereof into an undersized bore in an earth structure, such as a roof or wall of a mine shaft or tunnel, for stabilizing the structure, said stabilizer comprising a hollow, elongate body formed of a single wall which, in cross-section, is substantially annular, which body has means extending generally lengthwise, for at least half the length thereof, responsive to circumferential compression of said body, arising from such forced insertion thereof into such a structure bore, to cause at least a portion of said body to assume a diminished periphery to accommodate such forced insertion, and to cause said body frictionally to engage the surface of such a structure bore to stabilize the structure, and which body has a driven end with a terminal, impact surface thereat for accepting bore-insertion forces thereupon, wherein the improvement comprises means made integral with an external surface of said driven end of said body for reinforcing said driven end to accept bore-insertion forces addressed thereto and for fixing a support plate against the structure, said reinforcing means is slightly spaced from said terminal, impact surface to isolate said reinforcing means from bore-insertion forces addressed to said impact surface at least during a principal portion of bore-insertion of said stabilizer, whereby upon said reinforcing means closing upon a support plate, or a surface of an earth structure in which said stabilizer is forceably inserted, said reinforcing means and said terminal, impact surface merge toward a position in which said reinforcing means and said terminal, impact surface can accept bore-insertion forces in common.

4,126,005

INORGANIC CEMENT GROUTING SYSTEM FOR USE IN ANCHORING A BOLT IN A HOLE AND COMPARTMENTED PACKAGE FOR USE THEREWITH

David L. Coursen, Mercersburg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 6, 1977, Ser. No. 830,473
Int. Cl.[2] E21D *20/02;* **C04B** *7/02*
U.S. Cl. 405—261 **15 Claims**

1. A method of anchoring a reinforcing member in a hole in rock strata comprising

(a) delivering a hardenable inorganic grouting composition into the hole, said grouting composition comprising controlled amounts of at least two components, the first of said components (1) comprising a slush comprising a particulate inorganic cement and a liquid which is nonreactive therewith, and the second of said components (2) comprising a liquid which is reactive with said inorganic cement, said inorganic cement constituting more than 10 percent of the total weight of components (1) and (2); and

(b) introducing a reinforcing member into said grouting composition in said hole before any substantial hardening of said composition has occurred, whereby grouting composition is forced into an annulus formed between said reinforcing member and the wall of said hole; components

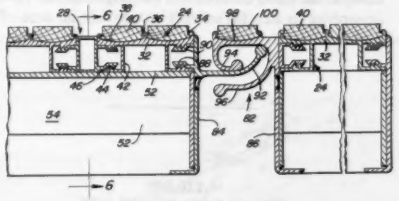
(1) and (2) being delivered into said hole in a separated or freshly brought-together condition and intimately mixed substantially without hesitation after having been brought together; whereby the intimately mixed components of the inorganic grouting composition react rapidly around said reinforcing member to form a hardened grout of sufficient strength to firmly anchor said reinforcing member in said rock strata.

4,126,006

BOAT DOCK ASSEMBLY

Mack A. Lewis, Sioux City, Iowa, assignor to C. Wilson Persinger, Sioux City, Iowa

Filed Jun. 10, 1977, Ser. No. 805,570
Int. Cl.[2] E02B *3/20*
U.S. Cl. 405—220 **17 Claims**



1. In a dock adapted to be assembled from a plurality of sections, pivotal means interconnecting adjacent sections of the dock in spaced relation to each other and tread retaining means connected to one of the adjacent sections in overlying relation to the hinge means for substantially bridging the adjacent sections of the dock, each of said sections including a plurality of decking members and spacer means interconnecting said decking members in close parallel spaced relation to each other, each of said decking members comprising an elongated rigid extrusion having a floor portion, at least one supporting rib depending from the floor portion, at least two tread retaining formations projecting upwardly from the floor portion and gripping means formed in underlying relation to the floor portion for receiving the spacer means.

4,126,007

COMPACTION OF SOIL

Bernard S. Mars, Pittsburgh, Pa., assignor to L.B. Foster Company, Pittsburgh, Pa.

Filed Jan. 3, 1977, Ser. No. 756,327
Int. Cl.[2] E02D *5/34*
U.S. Cl. 405—271 **29 Claims**

1. A method of compacting soil which comprises
(a) vibratorily sinking a hollow probe substantially vertically downwardly into the soil to be compacted, the lower end of said hollow probe having openable closure means which is closed during sinking of said probe to form a vertical hole in said soil by displacing said soil and to compact the soil around said probe by laterally forcing said soil away from the probe,
(b) vibratorily extracting said hollow probe upwardly from said hole with said closure means open, and
(c) prior to complete extraction of the probe from the hole and at least continuously during withdrawal, passing solid particulate material downwardly through the probe, said closure means being open during extraction, whereby a stone column is provided in said hole and is continuously consolidated by vibratory withdrawal of the probe, said compacted stone column and the adjacent soil compacted according to step (a) serving to provide an area of soil of high bearing strength.

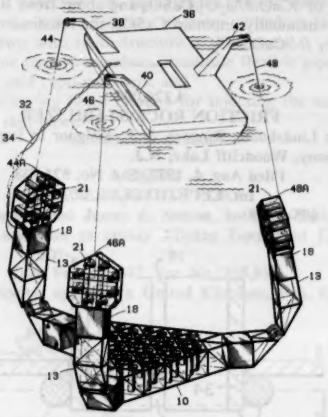
4,126,008

SEA-FLOOR TEMPLATE

David A. Dixon, Palatine, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 2, 1977, Ser. No. 830,221
Int. Cl.[2] E02B *17/02*
U.S. Cl. 405—207 **8 Claims**

1. A subsea template for locating boreholes in the sea bottom of a body of water which comprises:
a center base section;
arm means with an arm template at the outer end of each such arm means, said arm means and said arm template rigidly connected, said arm template section having vertical guide slots therethrough;
hinge means connecting the ends of the arm means opposite said arm template section to said center base section, whereby said arms can be folded back with said arm template over said center base section in a first position and can be unfolded to a second position to extend essentially horizontal away from said center base section;



flotation means for supporting said center base section and said arm means.

4,126,009

INORGANIC CEMENT GROUTING SYSTEM FOR USE IN ANCHORING A BOLT IN A HOLE

Ernst A. Tomic, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 6, 1977, Ser. No. 830,475
Int. Cl.[2] E21D *20/02*; C04B *7/02*
U.S. Cl. 405—260 **4 Claims**

1. In a grouting system for use in a hole in combination with a reinforcing member wherein a hardened grout is formed around the reinforcing member in the hole by the reaction of at least two mixed components of an inorganic grouting composition, thereby anchoring the reinforcing member in the hole, a first component of the inorganic grouting composition comprising a slush of a particulate inorganic cement that sets by hydration and a liquid which is nonreactive therewith, a second component, separated from the first, comprising water, and a particulate aggregate being present at least in the second component, the improvement comprising polyethylene oxide and/or polyacrylamide in the aggregate-containing water component as a thickener-lubricant.

4,126,010

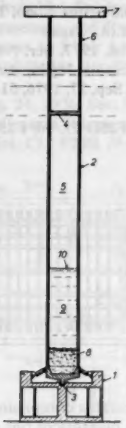
OSCILLATING INSTALLATION FOR INSTALLING IN A BODY OF WATER AND METHOD FOR ITS CONSTRUCTION

Dominique Michel, Paris, and Francisco de Assis M. Serrano, Issy-les-Moulineaux, both of France, assignors to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris", Paris, France

Filed Jul. 20, 1977, Ser. No. 817,373
Claims priority, application France, Jul. 23, 1976, 76 22515; Mar. 21, 1977, 77 08380
Int. Cl.[2] E02D *21/00*
U.S. Cl. 405—202 **26 Claims**

1. An oscillatable installation installed at a fixed site in a body of water, comprising a shaft which rests on a heavy base itself resting on the bed and which at its upper part supports a platform or any other part of the installation intended to be located above the level of the water, the shaft being connected to the base by a ball-joint enabling it to oscillate in any direction under the action of swell, the shaft being ballasted near to its base such that the total weight of the assembly of this ballast, shaft, platform or other part of the installation and masses

which it carries, is greater than the maximum lifting force exerted on the shaft by the strongest swells so that the ball-



joint, through the intermediary of which the shaft bears upon the base, is permanently under compression.

4,126,011

METHOD OF FABRICATION OF OFFSHORE STRUCTURES AND OFFSHORE STRUCTURES MADE ACCORDING TO THE METHOD

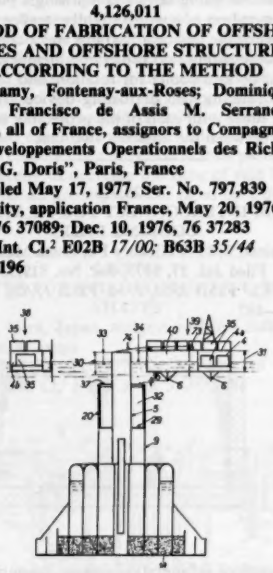
Jacques E. Lamy, Fontenay-aux-Roses; Dominique Michel, Paris, and Francisco de Assis M. Serrano, Issy-les-Moulineaux, all of France, assignors to Compagnie Generale pour les Developpements Operationnels des Richesses sous-Marines "C.G. Doris", Paris, France

Filed May 17, 1977, Ser. No. 797,839

Claims priority, application France, May 20, 1976, 76 15230; Dec. 9, 1976, 76 37089; Dec. 10, 1976, 76 37283

Int. Cl.[2] E02B *17/00*; B63B *35/44*

U.S. Cl. 405—196 **37 Claims**



1. Offshore structure comprising in combination, a support structure for resting on the bottom of a body of water and having means for registering therewith as an integral unit another member extending upwardly in the body of water, and another member comprising a platform of at least two pieces, each of them made up of a body which is closed, water-tight, floatable on water and fixed in registration with said support structure and therewith immersed in water comprising an assembly with at least one column projecting above the surface of the water including at least one support leg fixed under the platform rigidly connected with a single platform piece.

4,126,012

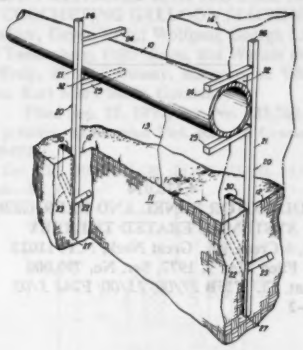
METHOD AND APPARATUS FOR SUPPORTING PIPE IN FILLED DIRT

George W. Waller, Cumming, Ga., assignor to James W. Green, Roswell, Ga.

Filed Jul. 15, 1976, Ser. No. 705,401

Int. Cl.[2] F16L *1/00*

U.S. Cl. 405—157 **16 Claims**



1. Apparatus for supporting a circular pipe comprising:

(a) a straight rigid body having an upper end and a lower end;

(b) rigid opposed barbs protruding sidewise from said body adjacent its lower ends; and

(c) a cradle carried by the upper end portion of said body, said cradle forming an opening for receiving and confining against appreciable movement therein a radial portion of a pipe;

(d) the lower end portion of said body being adapted to be driven into firm ground to a position which embeds the barbs in the firm ground.

4,126,013

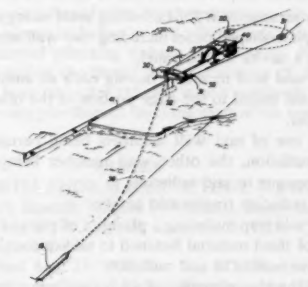
PIPELAYING UNDER ICE BY BOTTOM PULL

Roger McGovern, Hudson, Canada, assignor to Montreal Engineering Company, Limited, Montreal, Canada

Filed Sep. 8, 1977, Ser. No. 831,396

Int. Cl.[2] F16L *1/00*

U.S. Cl. 405—169 **6 Claims**



1. A method of laying an underwater pipeline underneath an ice sheet by a bottom pull, comprising: locating a pipe string to be laid adjacent a first shore; providing first flexible cable means along the upper surface of the ice sheet; connecting said first cable means, on the one hand, to pulling means located at a pulling point, and on the other hand, to an ice surface pull sled; attaching a flexible underwater cable means between said

pull sled and the pipe string to be laid; cutting a slot through the ice with an ice ditching means along a projected pipelaying path ahead of said pull sled; and operating said pulling means to pull said sled over the upper ice surface along said path and tow said pipe string along the water bottom by said underwater cable means through said slot.

4,126,014

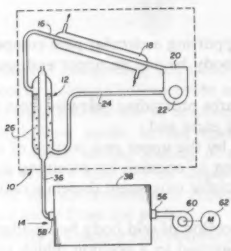
SOLAR COLLECTOR PANEL AND REFRIGERATION SYSTEM OPERATED THEREBY

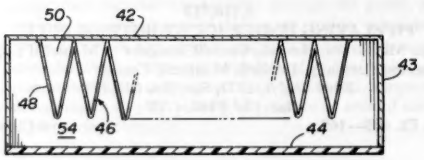
Thomas Kay, 6 Creek Rd., Great Neck, N.Y. 11023

Filed May 9, 1977, Ser. No. 795,000

Int. Cl.[2] **F25B** *27/00, 15/00;* **F24J** *3/02*

U.S. Cl. 62—2 **9 Claims**





1. An arrangement for collecting solar energy comprising:

(a) a plate-shaped panel including two wall members bounding a cavity in said panel,

(1) said wall members having each an annular edge portion sealed to the edge portion of the other wall member,

(2) one of said wall members being permeable to solar radiation, the other wall member being substantially opaque to said radiation;

(b) a radiation trap in said cavity,

(1) said trap including a plurality of pairs of trap elements of sheet material fastened to said one wall member and permeable to said radiation,

(2) the trap elements of each pair being joined spacedly adjacent said other wall member and diverging toward said one wall member at an acute angle; and

(c) circulating means for introducing a fluid into one part of said cavity and for withdrawing the introduced fluid from another part of said cavity remote from said one part,

(1) said trap elements and said other wall member defining therebetween a conduit for flow of said fluid between said portions.

4,126,015

AIR COOLING APPARATUS

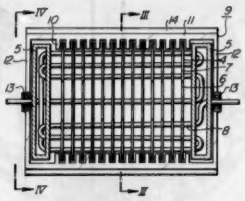
Kunio Fujie, Tokyo; Yoshinori Otsuka, Ushikumachi; Yoshifumi Kunugi, Yokohama, and Mituo Kudo, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 16, 1977, Ser. No. 825,045

Claims priority, application Japan, Aug. 20, 1976, 51-98707; Aug. 20, 1976, 51-98709; Sep. 27, 1976, 51-114732; Sep. 27, 1976, 51-114734

Int. Cl.[2] **F25D** *21/06;* **F25C** *1/14*

U.S. Cl. 62—284 **9 Claims**



1. An air cooling apparatus comprising:

a cooler comprising a plurality of fins and a plurality of heat transmitting tubes, said fins being arranged in substantially parallel relationship with a predetermined spacing therebetween and each being formed with an open space in the central portion thereof, and said heat transmitting tubes extending through said fins in a plurality of positions in the fins;

at least one defrosting device comprising a plurality of projecting members of a width slightly smaller than the spacing between the adjacent two fins and a connecting member for connecting said projecting members together and mounted on said cooler for rotation; and

means for rotating said defrosting device around the heat transfer tubes with each of the projecting members being located between the adjacent two fins.

4,126,016

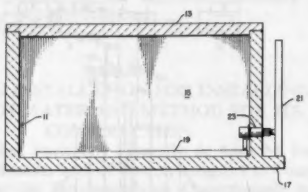
VACUUM INTERCONNECT FOR HEATING AND COOLING UNIT

Leonard Greiner, 2853-A Hickory Pl., Costa Mesa, Calif. 92626

Filed Jul. 27, 1977, Ser. No. 819,330

Int. Cl.[2] **F25D** *3/08, 3/10;* **F25B** *17/08, 13/00*

U.S. Cl. 62—457 **15 Claims**



1. An absorptive refrigeration system, comprising:

a first evacuated vessel containing a fluid to be vaporized;

a second evacuated vessel containing a vapor absorptive chemical;

a conduit interconnecting said first and second vessel; and

means for selectively opening said conduit without degrading the vacuum therein, said means comprising:

a hollow tubular member in fluid communication with one of said first and second vessels; and

a resilient sleeve fitting tightly against said hollow tubular member, separating said hollow tubular member from the other of said first and second vessels, and moveable relative said hollow tubular member for opening and closing a passage between said first and second vessels.

4,126,017

METHOD OF REFRIGERATION AND REFRIGERATION APPARATUS

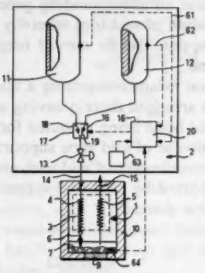
Joseph Bytniewski, Grenoble; Patrice Chovet, Bernin; Jean-Pierre Gabillard, Sassenage, and Roger Prost, Saint Egreve, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Aug. 24, 1976, Ser. No. 717,288

Claims priority, application France, Aug. 26, 1975, 75 26204

Int. Cl.[2] F25B *19/00*

U.S. Cl. 62—514 JT 15 Claims



1. Refrigeration apparatus comprising a Joule-Thompson refrigerator, a container for refrigerating fluid under high pressure, means for conveying said fluid from said container to said refrigerator, an orifice communicating between the interior of said container and said conveying means, a valve for at least partially closing said orifice, an expansible chamber which is exposed on its outer side to at least a portion of the pressure in said container and which upon expanding at least partially closes said valve, whereby upon an increase in the pressure within said expansible chamber relative to the pressure outside said expansible chamber, said valve is moved by said expansible chamber in a direction at least partially to close said orifice thereby to decrease the flow of said fluid to said refrigerator after an initial period of rapid cool down of said refrigerator.

4,126,018

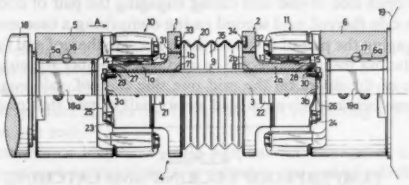
APPARATUS FOR INTERCONNECTING ROTARY SHAFTS

Hiroji Okuda, Nara, Japan, assignor to Koyo Seiko Company Limited, Osaka, Japan

Filed Jul. 25, 1977, Ser. No. 819,215

Int. Cl.[2] F16D *3/06, 3/26, 3/84*

U.S. Cl. 64—23 4 Claims



1. An apparatus for interconnecting rotary shafts comprising a splined spindle, flanged yoke members including sleeves slidably fitting around the opposite ends of the splined spindles respectively, and fitting yokes disposed outside the flanged yoke members and connected thereto by trunnions respectively, each of the trunnions being formed with a cylindrical bore extending centrally therethrough and receiving therein the sleeve of the flanged yoke member, and each of the fitting yokes being formed with a bore for receiving the end of a roll or rotary shaft so as to be connectable to the rotary shaft and rotatable therewith in the direction of rotation of the rotary shaft.

4,126,019

PATTERNING APPARATUS FOR PILE KNITTING MACHINES, PARTICULARLY FOR PRODUCING JACQUARD PATTERNED KNITTED PILE FABRICS ON CROCHETING GALLOON MACHINES

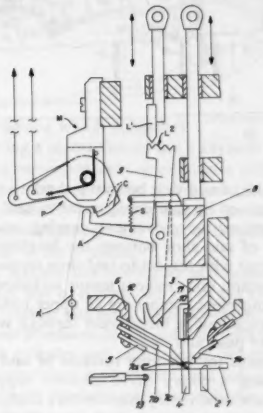
Heinz Lindner, Geyer/Erzg.; Wolfgang Georgi; Lisbet Muller, both of Tannenberg; Fritz Stopp, and Werner Oehm, both of Geyer/Erzg., all of Germany, assignors to VEB Wirkmaschienbau, Karl Marx Stadt, Germany

Filed Sep. 15, 1977, Ser. No. 833,782

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1976, 0419492

Int. Cl.[2] D04B *23/06, 23/08, 23/10, 23/12*

U.S. Cl. 66—84 R 7 Claims



1. A patterning device for pile knitting machines, particularly for producing jacquard-patterned knitted pile fabrics on crocheting galloon machines, comprising a row of slide needles, horizontally and vertically adjustable pile thread guides having a plurality of thread emerging openings parallel to the longitudinal axes of the needles for delivering patterning and non-patterning threads, a thread selecting sinker for each pile thread guide, means for disposing said sinker relative to said thread emerging openings of the respective pile thread guide, said sinker having a thread neck for the patterning pile thread, said disposing means including a vertically movable sinker bar whereon all thread selecting sinkers are hingedly disposed; characterized in that the thread selecting sinkers (**9**) are provided with at least one edge (**11, 12**) which positively diverts the non-patterning pile threads from the shaft of the needle (**1**).

4,126,020

LOW INERTIA SHOE MACHINE TOOL SUPPORT

Kingsley J. Tutt, Birstall; William F. Willbond, Ratby, and John Davies, Syston, all of England, assignors to USM Corporation, Farmington, Conn.

Filed Aug. 23, 1977, Ser. No. 827,070

Claims priority, application United Kingdom, Aug. 24, 1976, 35173/76

Int. Cl.[2] C14B *1/44;* A43D *95/00*

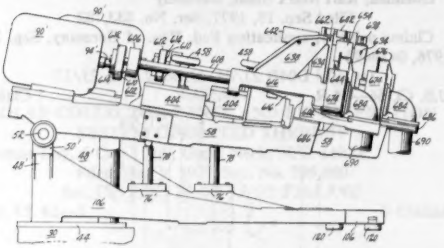
U.S. Cl. 69—6.5 3 Claims

1. A machine for roughing the margin of an upper of a shoe assembly mounted on a movable shoe assembly support, said shoe assembly including a last having an insole located on its bottom and an upper mounted thereon having its margin secured to the periphery of the insole, said machine comprising:

a rotary roughing tool supported by a tool supporting means, said tool supporting means comprising a carrier movable towards and away from said shoe support, said roughing tool comprising a roughing brush;

said tool support carried by said carrier being movable relative thereto wherein a tool supported thereby can be moved in a direction heightwise of the bottom of said shoe assembly and follow the plan shape of the bottom of said shoe assembly, to operate progressively along the marginal portion of the shoe bottom;

an adjustable resilient means which functions with said tool support to urge said tool into engagement with the bottom of said shoe, wherein movement of said tool in a direction



heightwise of said shoe bottom and relative to said carrier is determined by said engagement of said tool with said shoe bottom, the movement varying according to the contour of said shoe bottom, the heightwise position of said carrier with respect to said shoe support being generally constant; said resilient means including a double piston arrangement comprising an upper piston and a lower piston, each having bleed holes through which hydraulic fluid may pass; and

a drive means for effecting rotation of said roughing tool comprising a rotary drive member supported on said carrier, a second rotary member on a shaft, on which shaft a tool can be mounted, and an endless drive member interconnecting said rotary members.

4,126,021

DUST EXTRACTION ARRANGEMENT FOR AN AUTOMATIC ROUGHING MACHINE

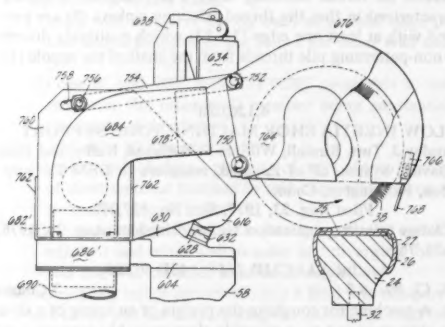
John Davies, Syston, and Shirley L. W. Fudger, Groby, both of England, assignors to USM Corporation, Farmington, Conn.

Filed Aug. 23, 1977, Ser. No. 827,071

Claims priority, application United Kingdom, Aug. 24, 1976, 35174/76

Int. Cl.[2] C14B *1/44*; A43D *0/0*

U.S. Cl. 69—6.5 **4 Claims**



1. A machine for roughing the margin of an upper of a shoe assembly mounted on a movable shoe assembly support, said shoe assembly including a last having an insole located on its bottom and an upper mounted thereon having its margin secured to the periphery of the insole, said machine comprising:

tool supporting means for supporting the rotary roughing tool;

means for effecting relative movement between said shoe support and said tool supporting means whereby a tool supported by the tool supporting means is caused to operate progressively along a marginal portion of the bottom of a shoe supported by the shoe support;

said tool supporting means comprising a tool support mounted on a carrier for pivotal movement relative thereto about an axis extending generally parallel to the axis of rotation of said tool whereby a tool supported by the tool support can be moved heightwise of said shoe support; and

dust extraction means comprising a hood member wherein said tool is arranged therein having an exposed operating surface, said hood being mounted for proportional movement heightwise of said shoe support with respect to the heightwise movement of said tool, and said hood member being supported by said tool support for pivotal movement relative thereto.

4,126,022

LOCK CONSTRUCTION FOR GLASS DOORS

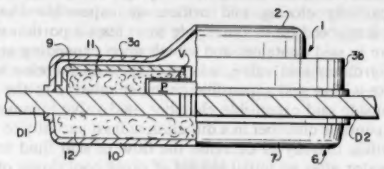
Luis Bara Marco, 32 Progresso St., Barcelona, Spain

Filed May 26, 1977, Ser. No. 800,849

Claims priority, application Spain, May 29, 1976, 211.314

Int. Cl.[2] E05B *9/08*

U.S. Cl. 70—102 **9 Claims**



1. An improved lock for a pair of hinged glass doors or the like, said lock comprising first and second coacting casings, said first casing comprising a single piece integral metal housing member open on one side and including a locking mechanism, including a lock bolt, disposed in and occupying approximately one-half of said first casing, the other half of the first casing being empty and said lock bolt extending toward said empty half of said first casing in the latching position thereof, the open side of said first casing engaging the pair of doors on one side thereof, said second casing comprising a base member engaging the pair of doors on the other side thereof and further including means connected to said base member for engaging one of the doors on the said one side thereof, said engaging means being received in said empty half of said first casing.

4,126,023

TAMPERPROOF LOCKING AND LATCHING MECHANISM FOR ROTATABLE CONTROLS

Michael E. Smith, Hinsdale, and Robert G. Brown, Derry, both of N.H., assignors to Watts Regulator Co., Lawrence, Mass.

Filed Apr. 14, 1977, Ser. No. 787,316

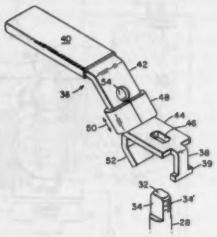
Int. Cl.[2] F16K *35/06*

U.S. Cl. 70—177 **6 Claims**

1. In a rotatable control device comprising a body having a boss and control means including a stem journaled in the body for rotation about an axis in the boss,

a handle having a grip end portion and slider-riding and stem-engaging portions, and

a slider on the slider-riding portion having a tang extending toward the boss, the boss having a surface engageable by the tang in a locking position of the slider to restrain the handle from rotation about said axis, said handle having a boss-engaging end portion extending toward the boss, and said boss having a surface engageable therewith to define



a rotational limit position of the handle, said slider being movable to said locking position with the handle located at said limit position, said boss being undercut at said surface to receive said end portion and thereby to prevent removal of said handle axially from said stem while the slider is in said locking position.

4,126,024

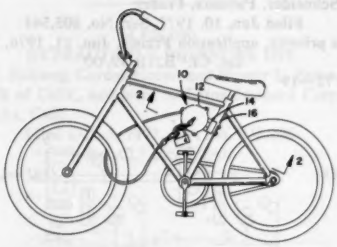
BICYCLE CABLE LOCK

David R. Timmons, 501 Avenida Largo, Newport Beach, Calif. 92660; Joseph Romagnoli, 1636 Cypress, La Habra, Calif. 90631, and Charles Bryan, 8436 San Clemente Way, Buena Park, Calif. 90620

Filed Mar. 24, 1977, Ser. No. 780,859

Int. Cl.[2] B62H *5/14*

U.S. Cl. 70—233 **8 Claims**



1. A cable lock comprising:

a housing having an opening therein;

a walled cylinder rotatably mounted in said housing having an aperture in a portion of its wall with an opening at least on one end;

a continuous length of cable adapted for storage in said housing wound around said cylinder, one end of which is threaded through said aperture and out of the open end, the other end passing out through the opening inside the housing so as to provide a continuous loop of cable when the ends are joined together;

means to secure the ends of said cable outside of said housing which can receive a lock therethrough so that the cable can form a continuous loop when joined by a lock; and,

a spring secured to said cylinder at one end while the other end is secured to said housing, to maintain a spring tensioned torque on said cylinder and effect retraction of said cable into said housing after extension and release thereof.

4,126,025

LOCKING DEVICE

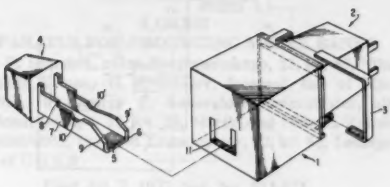
Yasuo Miyamae, Minanomachi, Japan, assignor to Sanpo Lock Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 613,973, Sep. 17, 1975, abandoned. This application Apr. 5, 1977, Ser. No. 784,825

Claims priority, application Japan, Dec. 24, 1974, 50-195; Dec. 24, 1974, 50-196

Int. Cl.[2] E05B *19/14, 27/06*

U.S. Cl. 70—360 **2 Claims**



1. A locking device which comprises:

a housing having a recess therein and a keyhole which has a U-shaped cross-section and communicates with the recess;

a lock cylinder disposed within the recess of said housing being longitudinally and non-rotatably movable therein, the lock cylinder having a key track of the same U-shaped cross-section as the keyhole;

a plurality of tumbler sets carried by said housing and said lock cylinder and overlying one leg of the U-shaped key track, said tumbler sets being normally biased to positions wherein their interfaces do not coincide with the interface of said lock cylinder and said housing, whereby relative motion therebetween is precluded, and being key actuatable to positions whereby said lock cylinder can then be longitudinally moved with respect to said housing to release a lock;

detent means overlying the other leg of the U-shaped key track, including at least a first and second detent in said lock cylinder and a detent element disposed in a hole in said housing, said detent element being spring-biased in the direction of said detents, for providing positive positioning of the lock cylinder with respect to said housing when said lock cylinder is moved longitudinally therewithin such that the locking device is in a locked or unlocked position;

a latch means attached to said lock housing;

actuator means disposed in said lock housing and extending into said latch means and being responsive to longitudinal movement of said lock cylinder for moving into said latch means and releasing same wherein said actuator means comprises an actuator rod carried by said latch means and an actuator rod pin member fixedly attached to said lock cylinder such that said actuator rod and said lock cylinder move unitarily; and

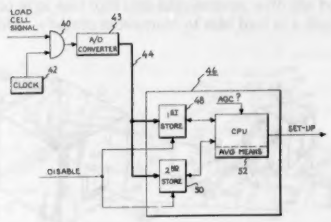
spring biasing means helically mounted on said actuator rod and disposed between said latch means and said lock cylinder for normally biasing said latch means and said lock cylinder away from each other and for urging said lock cylinder in the direction of said keyhole to a locked position,

the biasing force on said tumbler sets urging said tumbler sets to their normal position being relatively weak compared to the force of said spring biasing means between said latch means and said lock cylinder, whereby said lock cylinder is automatically returned to said locked position by said spring biasing means when an actuating key is removed from said keyhole and said key track.

4,126,026
METHOD AND APPARATUS FOR PROVIDING IMPROVED AUTOMATIC GAGE CONTROL SETUP IN A ROLLING MILL

Donald J. Fapiano, Salem, Va., assignor to General Electric Company, Salem, Va.

Filed Sep. 26, 1977, Ser. No. 836,725
Int. Cl.[2] B21B *37/08*
U.S. Cl. 72—6 **8 Claims**



1. In a metal rolling mill for reducing the thickness of a metal workpiece by successive passes of the workpiece through opposed work rolls, said mill being of the type including automatic gage control which may be rendered active on a selective basis during prescribed ones of said passes, an improved system for determining the initial roll openings for each of said passes after the first including:

(a) means for measuring the roll separation force during a pass of the workpiece between the rolls and for providing force signals indicative of the instantaneous values of said force;

(b) first store means for periodically storing the values of said force signal while a first control portion of said workpiece is between said rolls;

(c) second store means for periodically storing the value of said force signal while a second control portion, including the trailing end of said workpiece, is between said rolls; and,

(d) computation means responsive to selected values stored in said first and second store means to calculate the roll opening setting for the next pass of the workpiece between said rolls, said computation means employing only those values stored in said first store means when the mill is not to be operated under automatic gage control and employing the values stored in said second store when the mill is to be operated with auomatic gage control.

4,126,027
METHOD AND APPARATUS FOR ECCENTRICITY CORRECTION IN A ROLLING MILL

Andrew W. Smith, Jr., Mt. Lebanon, and Kenneth S. Kratz, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

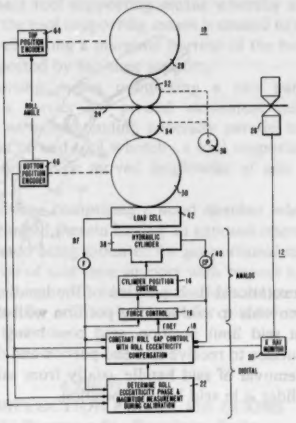
Filed Jun. 3, 1977, Ser. No. 803,195
Int. Cl.[2] B21B *37/00*
U.S. Cl. 72—11 **8 Claims**

1. A method for controlling the delivery gauge of a workpiece passing through a rolling mill stand having at least a pair of work rolls and at least a pair of back-up rolls, the work roll pair being in spaced relationship to define a roll gap through which the workpiece passes, the back-up rolls being mounted contiguously with said work rolls and having a spurious eccentricity, said work rolls exerting a roll force on said workpiece, said method comprising the steps of:

(a) measuring and recording the eccentricity magnitudes of said back-up rolls prior to rolling said workpiece;

(b) maintaining a constant roll gap at said work rolls when there is no change in the gauge of said workpiece, by keeping the roll force constant in accordance with a reference roll force, and rapidly bidirectionally displacing said back-up rolls so as to neutralize said measured and recorded eccentricity magnitudes;

(c) maintaining constant roll force assuming substantially no eccentricity of said back-up rolls, by less rapidly bidirectionally displacing said back-up rolls so as to maintain said



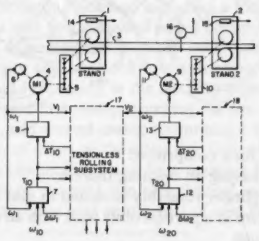
roll force constant with concomitant change in roll gap, and

(d) combining steps (b) and (c) by superposition when eccentricity and gauge changes obtain, so that said concomitant change in roll gap produces a new reference roll force to modify the response of step (b).

4,126,028
METHOD AND APPARATUS FOR STRESSLESS ROLLING OF METALS

Pierre A. Chapront, Montmorency, France, assignor to Jeumont-Schneider, Puteaux, France

Filed Jun. 10, 1977, Ser. No. 805,544
Claims priority, application France, Jun. 11, 1976, 76 17659
Int. Cl.[2] B21B *37/00*
U.S. Cl. 72—19 **4 Claims**



1. A method for the stressless rolling of metals passing successively through at least a pair of first and second rolling mill stands, the method comprising the steps of:

measuring and storing the magnitude of the rolling torque in the first mill stand, just before the metal enters the second mill stand;

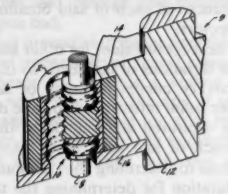
maintaining the rolling torque of the first stand constant at said stored magnitude until the speed of the first mill stand is stabilized; and

maintaining the ratio of the speeds of the first and second mill stands constant immediately after stabilization, and until rolling is ended.

4,126,029
METHOD OF FORMING HOLLOW CYLINDRICAL PARTS WITH INTERNAL CONTOURS

Pracheeschwar S. Mathur, Cambridge, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Dec. 2, 1976, Ser. No. 746,973
Int. Cl.[2] B21H *1/06*
U.S. Cl. 72—69 **5 Claims**



1. A method of manufacturing a hollow cylindrical metal structure having a plurality of internal contours comprising the steps of:

constructing an initial hollow metal cylinder having a weight, outside diameter and axial length substantially equal to the weight, outside diameter and axial length respectively of the desired structure and having a smooth outer surface,

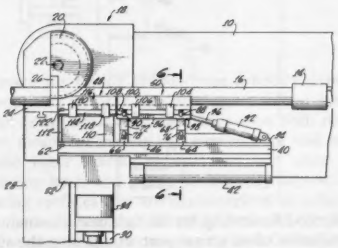
placing the initial cylinder within a cylindrical container having a smooth inner surface conforming to the outer surface of the cylinder,

rolling the cylinder between a forming roll die abutting the internal face of the initial cylinder and having a plurality of axially spaced external contours corresponding to the desired internal contours on the structure and a support roll die opposed to the forming roll die and engaging said container, while simultaneously restraining outward radial growth and axial growth of the cylinder, until the internal face of the cylinder conforms to the profile of the abutting forming roll die.

4,126,030
RETRACTABLE PRESSURE DIE

Richard T. Zollweg, Garden Grove, and Homer L. Eaton, Leucadia, both of Calif., assignors to Eaton-Leonard Corporation, Santa Ana, Calif.

Filed Oct. 3, 1977, Ser. No. 838,496
Int. Cl.[2] B21D *7/04*
U.S. Cl. 72—154 **13 Claims**



1. The method of bending a pipe comprising the steps of

grasping a portion of the pipe in a chuck and moving the pipe and chuck to position a forward section of the pipe between a clamp die and a bend die,

clamping a forward section of pipe between said clamp and bend dies,

rotating the bend and clamp dies together to bend the forward section of the pipe about the bend die,

pressing a more rearward section of the pipe toward the bend die by means of a pressure die as the pipe is bent, and

moving the pressure die forwardly relative to the bend die as the pipe is bent, said step of pressing the pipe toward the bend die comprising

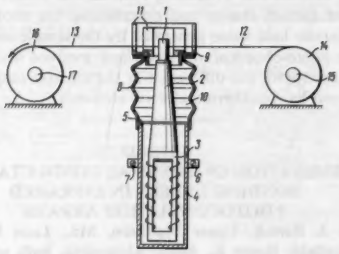
positioning a forward section of said pressure die adjacent one side of said pipe, and

moving a rear section of said pressure die relative to said forward section from said one side to clear the path of said chuck so as to allow the chuck to be positioned closer to the bend and clamp dies before completion of a bend without interferring with the pressure die.

4,126,031
APPARATUS FOR PRODUCING METAL BANDS

Evgeny P. Ignashev, ulitsa Korzhenevskogo, 13, kv. 85, Minsh, U.S.S.R.; Evmeny G. Konovalov, deceased, late of Minsk, U.S.S.R.; by Georgy E. Konovalov, administrator, ulitsa Akademicheskaya, 13, kv. 20, Minsk, and Nina E. Zaitseva, administratrix, prospekt Kosmonavtov, 92, kv. 92, Leningrad, both of U.S.S.R.

Filed Jul. 7, 1977, Ser. No. 813,673
Int. Cl.[2] B21C *1/02*
U.S. Cl. 72—285 **3 Claims**



1. An apparatus for producing metal bands from wire, comprising: a die having a U-shaped slit for the passage of said wire, a source of ultransonic oscillations with an acoustic concentrator whose end face adjoins said die, said slit having a central portion which is parallel to said concentrator end face and two lateral portions which are directed towards said concentrator, one wall of said central portion of the slit which is nearer to said concentrator being located within the zone of the antinode of a standing ultrasonic wave produced by said source of ultrasonic oscillations, the area of said wall being not greater than that of said concentrator end face, the length of each said lateral portion of said slit being greater than the distance therebetween; a payoff reel for said wire and a take-up reel for said band; a system for cooling said die; and a wire tension control mechanism.

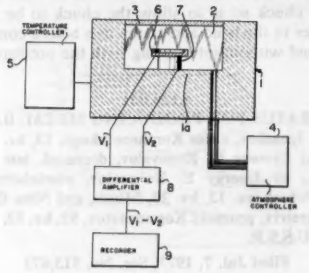
4,126,032
METHOD AND APPARATUS FOR DETERMINING PHOTO-CHEMICAL REACTION HEAT

Mitsuru Ikeda; Teppei Ikeda, both of Asaka; Yoshihiko Teramoto, Tokyo; Masatoshi Yasutake, Tokyo, and Yoshimi Nakamine, Tokyo, all of Japan, assignors to Kabushiki Kaisha Daini Seikosha and Fuji Film Co., Ltd., Japan

Filed Mar. 16, 1977, Ser. No. 778,035
Claims priority, application Japan, Mar. 23, 1976, 51-31667; Mar. 23, 1976, 51-31668
Int. Cl.[2] G01K *17/00*
U.S. Cl. 73—15 B **3 Claims**

1. A method for determining photo-chemical reaction heat evolved from a sample material irradiated with radiant energy within a calorimeter comprising the steps of: providing a calorimeter having a pair of sample holders connected to heat-leakage type thermo-electric elements which develop electric

output signals proportionate to the amount of heat energy conducted therethrough; irradiating both sample holders with radiant energy before disposing the sample material thereon to heat said holders and develop electric output reference signals therefrom; adjusting the amount of radiant energy being irradiated on at least one of said sample holders to effectively compensate for any difference between the two reference signals;



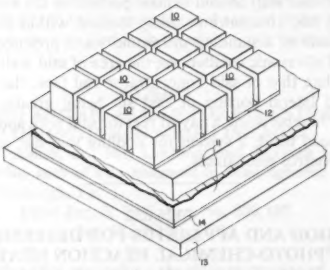
and then mounting a sample material on at least one of said sample holders and irradiating both sample holders with the adjusted radiant energy and determining the exothermic or endothermic heat value generated by the sample material due to the photo-chemical reaction heat evolved therefrom in accordance with the difference in the electric output signals developed by said thermo-electric elements.

4,126,033

DETERMINATION OF THERMAL CONDUCTANCES OF BONDING LAYERS IN INFRARED PHOTOCONDUCTOR ARRAYS

Filbert J. Bartoli, Upper Marlboro, Md.; Leon Esterowitz, Springfield; Roger E. Allen, Alexandria, both of Va., and Melvin R. Kruer, Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 23, 1977, Ser. No. 809,490
Int. Cl.[2] G01N *25/18*
U.S. Cl. 73—15 A **1 Claim**



1. A method of determining in-site the thermal conductances of bonding layers of IR detectors in a test array of infrared detectors which comprises:

simultaneously scanning all detectors of said array with a laser beam having a specific intensity such that said laser beam dwells on each detector of said array for a set time duration;

setting the incident laser beam intensity to zero;

recording the temperature of each of said detectors and the time at said zero intensity setting;

continuously recording the time and temperature change of each of said detectors from said zero setting until the initial preheated temperature is reached to obtain a thermal recovery curve of each of said detectors;

comparing the recorded thermal recovery curve for each of said detectors with a calculated family of thermal recovery curves using like laser intensities and beam duration and thermal conductances of different bonding layers employed in fabricating said detectors of said array thereby obtaining from said comparison individual thermal conductances of each of said bonding layers of said array of detectors;

repeating said heat-record steps for other laser beam intensities and time durations of incidence to obtain a family of thermal recovery curves for each of said detectors at different laser beam intensities and time durations;

comparing the measured and calculated thermal recovery curves for each of said laser beam intensities and laser beam durations to determing the optimum laser intensity and beam duration for determining the thermal conductance of a first bonding layer of each of said detectors;

said optimum laser beam intensity and pulse duration being different for each of said detectors;

repeating said latter comparison step for determing the thermal conductance of a second bonding layer of each of said detectors;

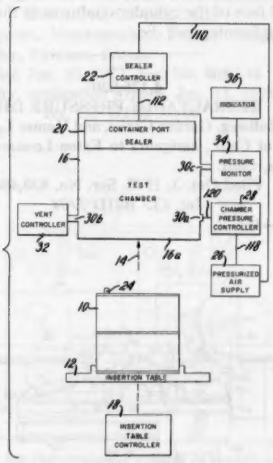
whereby the thermal conductances of said first and second bonding layers are derived from said optimum laser intensities and pulse durations obtained separately for each of said layers.

4,126,034

METHOD AND APPARATUS FOR CONTAINER PRESSURE TESTING

William A. Conrad, Pinole, Calif., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed Jan. 30, 1978, Ser. No. 873,096
Int. Cl.[2] G01M *3/32*
U.S. Cl. 73—49.2 **11 Claims**



1. A method for testing for air tightness a container having a head inclusive of an access port, comprising the steps of:

(a) disposing said container in an airtight axially extending passage having an extent encircling said container; then

(b) commonly pressurizing the interior of said container and such encircling passage extent to a preselected pressure level; then

(c) sealing said container; then

(d) establishing in said encircling passage extent a predetermined pressure level diverse from said preselected pressure level; and then

(e) detecting and indicating the measure of pressure level

change in said encircling passage extent from said predetermined pressure level.

6. A system for testing for air tightness a container having a head inclusive of an access port, comprising:

(a) test chamber means defining an open end and an axial passage extending from said open end for receiving said container;

(b) support means operable for advancing said container axially within said passage and thereupon sealing said chamber open end;

(c) test chamber pressurizing means operable for establishing a preselected pressure level in said passage;

(d) sealing means for defining a sealing surface radially continuous with respect to the axis of said test chamber means passage and operable for axial translation in said test chamber means for moving said sealing surface into confronting sealing relation with said container access port;

(e) vent means operable to establish in said passage a predetermined pressure level diverse from said preselected pressure level;

(f) control means for successively operating said support means, said pressurizing means, said sealing means, and said vent means; and

(g) detector means for indicating pressure change in said passage.

4,126,035

ECCENTRIC VISCOMETER FOR TESTING BIOLOGICAL AND OTHER FLUIDS

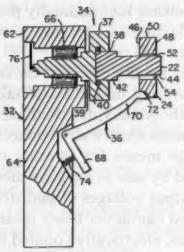
Louis Kopito, Brookline; Samuel R. Schuster, Wellesley, and Harold Kosnsky, Brookline, all of Mass., assignors to Ovutime, Inc., Brookline, Mass.

Continuation of Ser. No. 573,348, Apr. 30, 1975, Pat. No. 3,979,945. This application Sep. 10, 1976, Ser. No. 722,217

The portion of the term of this patent subsequent to Sep. 7, 1993, has been disclaimed.

Int. Cl.[2] G01N *11/00, 33/16*

U.S. Cl. 73—60 **1 Claim**



1. A device for testing mucus from a bodily cavity, said device comprising an inner bearing element and an outer bearing element constrained for eccentric motion with respect to each other, means for biasing said elements for said eccentric motion, said inner bearing element and said other bearing element having inner and outer, horizontally disposed, cylindrical bearing surfaces that are characterized by substantially eccentric displacement, the difference between the diametral profiles of said bearing surfaces ranging from 0.01 to 10.0 mils, a crescent shaped gap formed between said bearing surfaces, said substantially eccentric displacement being in accordance with the following relationship:

$$\eta = M'/\Omega$$

where

M' = (*f*) V as well as coaxial moment; such that

$$\eta = M/\Omega$$

where

η = viscosity

M = torque (moment)

Ω = angular displacement in radians or angular velocity; such that

$$V = \Delta P/\Omega$$

where

V = displaced volume per second

ΔP = pressure difference;

and such that

ΔP operationally analogous to M and

$$\eta = \Delta P/V.$$

4,126,036

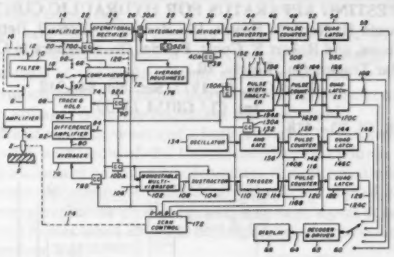
SURFACE ROUGHNESS ANALYZER

Thomas G. Nilan, Penn Hills Township Allegheny County, and Ralph G. Rudolph, Edgewood Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jul. 27, 1977, Ser. No. 819,530

Int. Cl.[2] G01B *5/28*

U.S. Cl. 73—105 **18 Claims**



1. A surface roughness analyzer in which a stylus connected to a transducer is moved across a surface providing a varying electrical signal representative of the surface profile and establishing peak support widths at a selected reference level as the signal level crosses the reference level comprising

means connected to the transducer for providing a pulse train in which the duration of each pulse is representative of a peak support width established by the electrical signal crossing the reference level,

means connected to the means for providing a pulse train for determining whether the duration of each pulse occurs within one of a selected plurality of ranges, and

means connected to the means for determining pulse duration occurrence within a range for counting the number of occurrences in each range.

4,126,037

COMPRESSION TEST USING BATTERY VOLTAGE WAVEFORM DURING CRANKING

Richard E. Hanson, Winchester, and Ronald E. Tetrev, Westford, both of Mass., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,562

Int. Cl.[2] G01M *15/00*

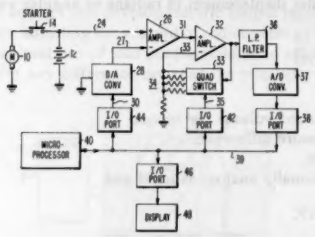
U.S. Cl. 73—116 **15 Claims**

1. Compression testing apparatus for testing an internal combustion engine, comprising

means for detecting the battery voltage waveform when the engine is cranked with the ignition or fuel inhibited, said voltage waveform having cycles between positive voltage peaks,

amplifier means for amplifying the detected voltage waveform relative to a reference voltage,

means to adjust said reference voltage to a value approximating the direct-current component of said voltage waveform, and



means to increase the gain of said amplifier, whereby to increase the amplification of the alternating-current component of said voltage waveform, and

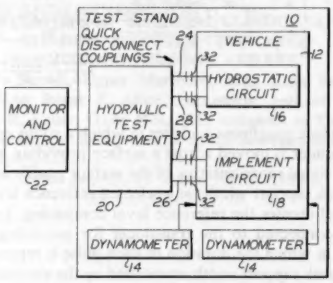
means to compare the cycles of said amplified voltage waveform.

4,126,038

TESTING APPARATUS FOR HYDRAULIC CIRCUITS

Harold H. Bartlett, Peoria, Ill.; Rodney L. Bussell, Bettendorf, Iowa, and Robert E. Coats, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 31, 1977, Ser. No. 846,948
Int. Cl.[2] G01M *17/00*
U.S. Cl. 73—118 **4 Claims**



1. A testing apparatus for testing the hydraulic circuits of a vehicle having at least two independent hydraulic circuits, comprising:

a plurality of supply conduits, one for each independent hydraulic circuit, for receiving hydraulic fluid from the associated circuit;

coupling means on said supply conduits for coupling each supply conduit to an associated circuit;

return means for returning hydraulic fluid to said circuits;

a single particle sensor adapted to receive hydraulic fluid and provide an output signal indicative of particle contaminants of the hydraulic fluid, said return means being connected to said sensor;

means for selectively connecting any desired one of said supply conduits from said sensor;

a plurality of return conduits, one for each independent hydraulic circuit;

coupling means on each of said return conduits for coupling each return conduit for an associated circuit;

said selective connecting means being operative to connect the one of said return conduits associated with a selected supply conduit to said sensor while disconnecting the remainder of said return conduits from said sensor, said selective connecting means comprising valve means in close fluid flow proximity to said sensor and remote from said coupling means, and

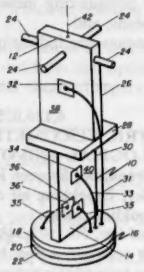
bypass valves in close fluid flow proximity to said valve means for selectively interconnecting each supply conduit with the associated return conduit.

4,126,039

PROJECTILE STRAIN DAMAGE INDICATING DEVICE

Chester L. Smith, Lake Hopatcong, and David N. Everswick, Succasunna, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 26, 1977, Ser. No. 800,774
Int. Cl.[2] G01L *1/22*
U.S. Cl. 73—167 **7 Claims**



1. A strain damage indicating device for evaluating environmental stress that a projectile is subjected to while in transport which comprises;

cantilever beam means longitudinally positoned in said projectile for deflecting in accordance with environmental stress applied to said projectile;

strain gage means fixedly disposed on said cantilever beam means for measuring deflection of said beam means in a plurality of orthogonally disposed axes;

amplifier-filter means electrically connected to the output of said strain gage means for filtering out high frequency noise generated by said strain gage means and amplyfying the residual output voltages of said strain gage means due to strain on said cantilever beam means;

comparator means, electrically coupled to the output of said amplifier-filter means, for generating voltage output signals only after receiving input signals of a predetermined voltage level;

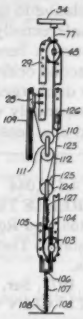
counter means, electrically connected to the output of said comparator means, for recording the number of instances that said strain gage means generates output voltage signals above a predetermined voltage level, including means for interrogating said counter means to determine the number of counts contained therein; and

power saving circuit means fixedly connected to one end of said beam means and electrically coupled to said strain gage means which includes a battery power supply electrically connected therein for conserving the reserve energy of said power supply by maintaining said strain gage means at a relatively low "idle" current until strains of a predetermined level are encountered and for activating said amplifier-filter means, comparator means and counter means circuitry upon said strains reaching said predetermined level.

4,126,040
LIQUID LEVEL GAUGE

Alan J. Varacins, Downers Grove; Richard J. Richards, Libertyville, and Joseph A. Ferro, Park Ridge, all of Ill., assignors to Gard, Inc., Niles, Ill.

Filed Dec. 30, 1977, Ser. No. 865,836
Int. Cl.[2] G01F 23/00
U.S. Cl. 73—293 8 Claims

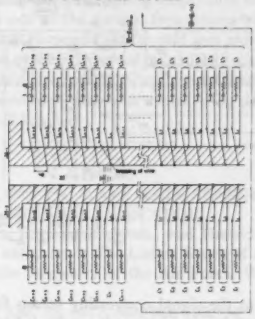


1. A liquid level gauge for a tank, which comprises:
liquid-level sensing means;
a housing, that in the use of the gauge is mounted at a top opening of the tank, said housing having:
a horizontal bottom wall with an opening that is in alignment with the top opening of the tank when said gauge is mounted for use;
side wall; and
a top wall,
said housing having no other opening through which any moving component of said gauge extends so that a dynamic seal would be required;
a magnetic drive having a drive magnet and a driven magnet;
a first shaft mounted in said housing and having said driven magnet fixed mounted on it closely spaced from the inside surface one of said side walls and top wall;
a second shaft mounted outside said housing and having said drive magnet mounted on it for rotation closely spaced from the outside surface of said one wall to provide turning of said driven magnet upon turning of said drive magnet;
means, that is outside said housing, connected to said drive magnet to rotate it;
means connected to and supporting said liquid-level sensing means and extending upwardly through said opening in said bottom wall of said housing;
means in said housing connected to said first shaft and to said support means connected to said liquid-level sensing means, said means connected to said first shaft and said means supporting said liquid-level sensing means being constructed to provide vertical movement of said liquid-level sensing means upon rotation of said first shaft;
means responsive to the rotation of said first shaft to indicate the position of said level-sensing means relative to a reference position, said responsive means having a component in said housing and a component outside said housing and constructed so that said inside component operates said outside component without a connection through said housing that requires a dynamic seal; and
means connected to and constructed to be responsive to the operation of said liquid-level sensing means, when it senses the liquid level at the liquid-level sensing means during relative vertical movement of the liquid level and the liquid-level sensing means, to indicate the operation of said liquid-level sensing means.

4,126,041
APPARATUS FOR DETECTING THE LEVEL OF A MOLTEN METAL IN A MOLD

Yuuji Doi, and Terumiti Masumori, both of Ohita, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 19, 1977, Ser. No. 788,963
Claims priority, application Japan, Apr. 19, 1976, 51-44733
Int. Cl.[2] G01F 23/22
U.S. Cl. 73—295 4 Claims



1. An apparatus for detecting the level of molten metal in a mold, which comprises:
at least one group of a plurality of thermocouples set at predetermined intervals in a vertical direction along the side wall of the mold; circuit means connected to said thermocouples for taking individual thermo-electromotive voltages from the respective thermocouples;
a source of electric power and a high resistance connected in parallel with each of the thermocouples, said source of electric power having a larger voltage than the maximum thermo-electromotive voltage generated by any of the thermocouples for producing a high voltage signal at said circuit means when a wire in corresponding thermocouple is broken; and
signal processing means connected to said circuit means and having a memory for receiving respective signals corresponding to the thermo-electromotive voltages from the circuit means and storing the said signals in the order of the positions of the thermocouples, a comparing and checking circuit connected to the memory for checking the signals held in the memory unit for judging whether or not any one of them is sufficiently large to indicate a broken wire in the corresponding thermocouple and if so to correct it to a value corresponding to the pattern of the thermo-electromotive voltages of thermocouples having no broken wire and selecting the maximum thermo-electromotive voltage from said pattern, and an arithmetic unit connected to said memory for calculating the thermo-electromotive voltage corresponding to the level of the surface of the molten metal in the mold from the maximum voltage by using a predetermined ratio and for calculating the level of the molten metal in the mold based on the calculated voltage, the pattern of the positions of arrangement of said sound thermocouples and the pattern of the thermo-electromotive voltages corresponding thereto.

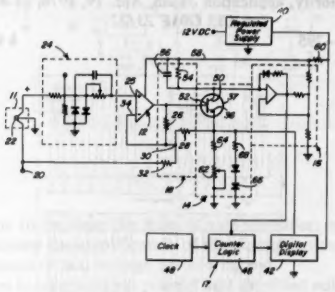
4,126,042
ERROR COMPENSATING NETWORK FOR DIGITAL DISPLAY THERMOMETER

Marine D. Lynch, Beaverton, Oreg., assignor to Digicon Corporation, Beaverton, Oreg.

Filed Jun. 28, 1977, Ser. No. 810,793
Int. Cl.[2] G01K 7/12
U.S. Cl. 73—361 16 Claims

1. In a thermometer having a thermocouple formed by a junction of dissimilar metals located in a monitored region and connected to terminals of opposite polarity located externally of said region, differential ampliflier means having inverting and non-inverting inputs connected to said terminals for pro-

ducing a voltage output responsive to a difference in potential generated at said junction reflecting changes in temperature of the monitored region, signal converting means connected to said amplifier means for conducting signal current as a function of the voltage output from the amplifier means, readout means



connected to the signal converting means for registering the magnitude of the signal current conducted reflecting the temperature of said monitored region, and error correcting means directly connected to one of the terminals exposed to ambient temperature conditions for correctively varying the current conducted through the signal converting means.

4,126,043

APPARATUS FOR DIVIDING A LIQUID INTO PRECISELY DEFINED ALIQUOTS

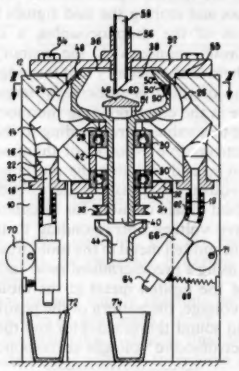
Werner Schurmann, Greifensee, Switzerland, assignor to Mettler Instrumente AG, Greifensee-Zurich, Switzerland

Filed Sep. 7, 1977, Ser. No. 831,248

Claims priority, application Switzerland, Nov. 30, 1976, 15021/76

Int. Cl.[2] G01N *1/18*

U.S. Cl. 73—424 **12 Claims**



1. Apparatus for dividing an amount of liquid into a plurality of portions in a precise, predetermined ratio comprising:

(a) a normally stationery support;

(b) a bowl mounted on said support for movement about an axis of rotation;

(1) said bowl including an axially extending wall bounding a cavity in said bowl capable of containing said liquid during said movement,

(2) said wall being formed with a passage extending therethrough between a first orifice communicating with said cavity and a second orifice spaced radially outward from said first orifice relative to said axis,

(3) said second orifice moving in a plane radial relative to said axis during said movement of said bowl for centrifugal discharge of said liquid in said plane;

(4) and drive means for rotating said bowl about said axis at a speed sufficient for causing said centrifugal discharge;

(c) a plurality of partition walls mounted on said support and transversely intersecting said plane,

(1) said partition walls being spaced from each other circumferentially relative to said axis,

(2) each pair of circumferentially adjacent partition walls defining therebetween a receptacle on said support open toward said second orifice for receiving a portion of the centrifugally discharged liquid; and

(d) draining means for separately withdrawing the portions of said liquid received in at least two of said receptacles.

4,126,044

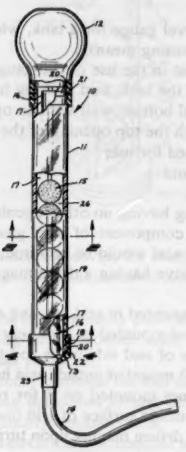
ANTIFREEZE TESTER

Brian N. Tichy, Bloomington, and Robert E. Clark, Minneapolis, both of Minn., assignors to Thexton Manufacturing Company, Minneapolis, Minn.

Filed Nov. 4, 1977, Ser. No. 848,465

Int. Cl.[2] G01N *9/10*

U.S. Cl. 73—440 **10 Claims**



1. A specific gravity tester for liquids such as antifreeze solution for automotive vehicles, comprising

a transparent tube with a flexible hose on one end and a collapsible suction bulb on the other end,

a plurality of flat and wafer-like floats of various specific gravities and disposed in the tube,

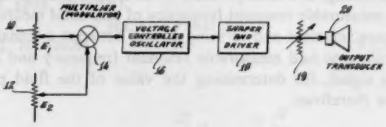
the tube having an interior guideway confining the floats and extending longitudinally of the tube, the guideway having a width substantially greater than thickness to orient all of the wafer-like floats approximately the same therein, the tube defining a pair of substantially broad, flat side surfaces confronting each other and extending across the width of the guideway and also defining a pair of longitudinal edge surfaces across the thickness of the guideway, and the tube also having a pair of elongate ribs in the guideway and extending longitudinally thereof, each of the ribs projecting from a respective side surface in a direction across the thickness of the guideway and each rib being spaced from each edge surface by a distance significantly less than the width of the wafer-like floats, the ribs being spaced from each other by a distance which is significantly more than the thickness of the wafer-like floats and which is also significantly less than twice the thickness of the floats.

4,126,045

REMOTE SPEEDOMETER-TACHOMETER

Wayne W. Chou, 19 Sea Beach Dr., Stamford, Conn. 06902

Filed Nov. 11, 1977, Ser. No. 850,783
Int. Cl.[2] G01P *3/42*; G01S *9/66*
U.S. Cl. 73—488 **4 Claims**



1. A remote speedometer-tachometer for measurement by an observer of the speed of a craft and/or revolutions per minute of any type of engine mounted in said craft which produces characteristic audible output pulses therefrom, comprising in combination

(a) a first adjustable and settable voltage related to pitch of an engine or other source with the sound moving toward the observer,

(b) a second adjustable and settable voltage related to pitch of an engine or other source with the sound moving away from the observer,

(c) multiplier means having said first and second voltages coupled thereto for modulating said first voltage by said second voltage,

(d) oscillator means for generating outputs which are narrow in duration,

(e) means for coupling the outputs of said multiplier means to said oscillator means for controlling the output of said oscillator, and

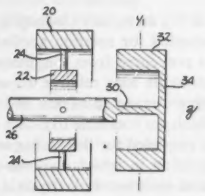
(f) output transducer means coupled to the output of said oscillator means whereby the observer by appropriately adjusting said first and second voltages can match the output of said transducer with the sound from said engine and the settings of said first and second voltages being calibrated to provide the speed of the craft and/or RPM measurements for the engine mounted in the craft.

4,126,046

TWICE SPIN FREQUENCY ROTATING FILTER

Harold F. Erdley, Pacific Palisades, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 710,693, Aug. 2, 1976, Pat. No. 4,082,005, which is a continuation-in-part of Ser. No. 608,770, Aug. 25, 1975, Pat. No. 3,974,701. This application Dec. 8, 1977, Ser. No. 858,711
Int. Cl.[2] G01C *19/16*; G01P *15/02*
U.S. Cl. 73—504 **28 Claims**



1. In a tuned inertial sensor having a shaft supported from a frame by at least one bearing for rotation about a spin axis at a predetermined spin speed and a sensitive element and a sensitive element support system coupling the sensitive element to the shaft so as to allow relative motion between the sensitive element and the shaft, apparatus for reducing the inertial sensor sensitively to twice spin speed angular vibrations comprising:

a filter rotor means disposed substantially coaxial with said spin axis; and

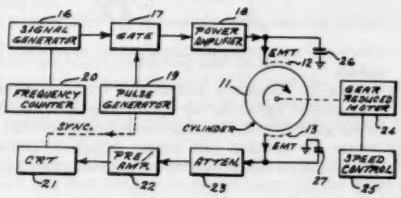
spring suspension means for coupling said filter rotor to said shaft so as to rotate therewith, said spring suspension means being a means for allowing spring restrained rotation of said filter rotor with respect to said shaft about axes perpendicular to said spin axis, the combination of said filter rotor means and said spring suspension means being tuned so that one of the natural frequencies of said filter rotor about axes perpendicular to said spin axis is substantially equal to twice spin speed when said shaft and said filter rotor means are rotating at spin speed, said one of the natural frequencies of said filter rotor being uncaged and substantially undamped.

4,126,047

SURFACE ACOUSTIC WAVE RATE SENSOR AND POSITION INDICATOR

James C. Sethares, Burlington, Mass., and Harold M. Frost, Rockville, Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 25, 1977, Ser. No. 790,774
Int. Cl.[2] G01P *3/44*
U.S. Cl. 73—505 **10 Claims**



1. A surface acoustic wave rate sensor and position indicator comprising

a movable member having a surface acoustic wave propagation surface,

means for inducing surface acoustic waves on said propagation surface,

surface acoustic wave reflector means adapted to establish a surface acoustic standing wave field in fixed position on said propagation surface, and

detector means for detecting the frequency and phase relationship of surface acoustic standing wave field amplitude fluctuations, at least one of the group of elements consisting of said means for inducing surface acoustic waves, said surface acoustic wave reflector means and said detector means being in a fixed frame relative to said movable member.

4,126,048

ULTRASONIC PULSE TESTING APPARATUS WITH INTERFACE GATING

Sven E. Mansson, Hollviksnas, Sweden, assignor to Magnetic Analysis Corporation, Mount Vernon, N.Y.

Filed Aug. 24, 1977, Ser. No. 827,235
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—611 **8 Claims**

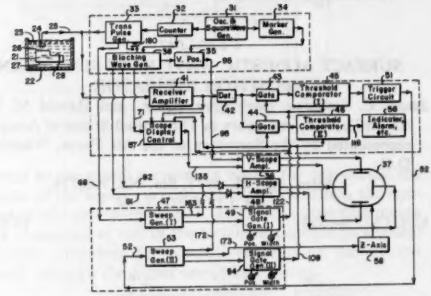
1. Ultrasonic non-destructive pulse testing apparatus which comprises

(a) pulse generator and transducer means for applying ultrasonic pulses to an object to be tested,

(b) means for receiving interface signals from an object under test and flaw signals corresponding to variations or defects in the object,

(c) cathode-ray tube means for displaying received signals,

(d) first and second sweep generators for supplying sweeps to said cathode-ray tube means,
(e) an adjustable interface gate generator synchronized with said first sweep generator for producing an interface signal gate at a selectable position along the sweeps produced thereby,
(f) an adjustable threshold circuit supplied with received signals and with said interface signal gate for producing trigger signals when received signals within the gate exceed the threshold level thereof,
(g) means connected with said threshold circuit for producing from said interface signal gate a display interface signal gate having an amplitude substantially equal to the minimum amplitude of received signals as displayed



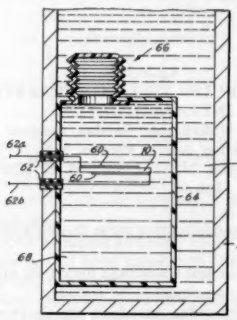
which will actuate the threshold circuit to produce trigger signals,
(h) means for displaying said display interface signal gate and received signals during different sweeps from the first sweep generator and having coinciding baselines,
(i) means for utilizing said trigger signals to control the initiation of sweeps produced by said second sweep generator,
(j) a flaw signal gate generator synchronized with the second sweep generator for producing a flaw signal gate,
(k) and an adjustable flaw threshold circuit supplied with received signals and with the flaw signal gate for producing output signals when received signals within the flaw gate exceed an adjustable threshold level.

4,126,049

SYSTEM AND METHOD OF MEASURING FLUID PRESSURE FORCE

Mitchell A. Cotter, 4555 Henry Hudson Pkwy., Bronx, N.Y. 10471

Filed Feb. 14, 1977, Ser. No. 768,362
Int. Cl.[2] G01L 9/00
U.S. Cl. 73—702 **20 Claims**



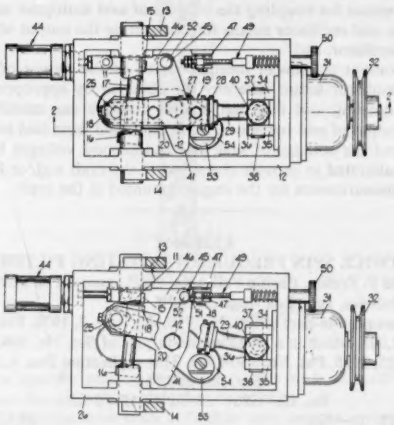
1. A fluid pressure force measuring system comprising a solid mechanically resonant element immersed in a pressure bearing medium and whose frequency is affected by the value of the fluid pressure force to be measured and whose relative change in frequency with changes in fluid pressure force is primarily dependent on the bulk properties of said solid mechanically resonant element; exciting means for exciting said solid mechanically resonant element; and detecting means for determining, at a fluid pressure force to be mesured, the value of a measurable resonant frequency of said solid mechanically resonant element and forming a ratio between a signal corresponding to said measurable resonant frequency and a reference signal, for determining the value of the fluid pressure force therefrom.

4,126,050

VIBRATOR

George A. Lee, Malvern, England, assignor to Ronald Melville-Smith, England

Filed Apr. 5, 1977, Ser. No. 784,858
Claims priority, application United Kingdom, Apr. 14, 1976, 15187/76
Int. Cl.[2] F16H 21/16
U.S. Cl. 74—26 **12 Claims**



1. A vibrator having an actuator assembly which includes an actuator shaft mounted for rotation about its axis relative to said assembly but prevented from longitudinal movement in a direction parallel to its axis relative to said assembly, said actuator shaft being connected at one end to power-actuated driving means which are rotatable to rotate said actuator shaft, means being also provided for displacing said actuator assembly between a position in which the axis of rotation of said driving means is co-incident with the axis of rotation of said actuator shaft so that rotation of the latter will not result in any longitudinal oscillation of said actuator shaft and actuator assembly and a position in which the axis of rotation of said actuator shaft is set in a direction in which it is inclined to the axis of rotation of said driving means in such a manner that rotation of said actuator shaft will result in longitudinal oscillation of said actuator shaft and actuator assembly, said actuator assembly being connectible to a member which in use is to be vibrated whereby such longitudinal oscillation of the actuator assembly will effect vibration of said member.

4,126,051

CHANNEL SELECTOR

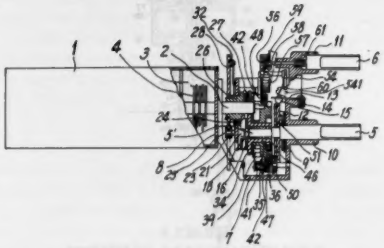
Toshio Hayakawa, Katano, and Itaru Mitsugi, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

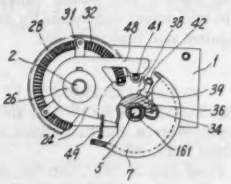
Filed Jul. 1, 1976, Ser. No. 701,965

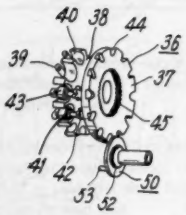
Claims priority, application Japan, Jul. 23, 1975, 50-90506; Jul. 23, 1975, 50-90507

Int. Cl.[2] F16H *35/18*

U.S. Cl. 74—10.41 9 Claims







1. A channel selector comprising:
a channel selecting shaft,
a fine tuning shaft,
a variable capacitor,
an Oldham coupler which links rotation of said channel selecting shaft to a driving gear rotatably mounted on a lever-plate,
a driven gear engaging said driving gear and secured to a shaft of said variable capacitor,
a slippable click stop coupler which links turning of said lever plate, journaled rotatably around said variable capacitor shaft, to said driven gear, and
a memory means having a specified number of memory cams each comprising an eccentric ring the angular position of which is adjusted by said fine tuning shaft, said memory cams selectively touching a contacting part of said lever plate to give a memorized fine adjustment of said variable capacitor, said selection of said memory cams being made in response to the angular position of said channel selecting shaft.

4,126,052

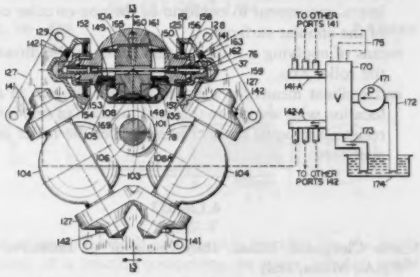
FRICTION TRANSMISSION

Charles W. Jackman, 5986 Alan Dr., Brighton, Mich. 48116

Continuation-in-part of Ser. No. 640,021, Dec. 11, 1975, abandoned. This application Mar. 28, 1977, Ser. No. 781,561

Int. Cl.[2] F16H *15/10, 15/12*

U.S. Cl. 74—200 3 Claims



1. In a friction transmission, the combination comprising
a driving member,
a driven member,
means for mounting said members for rotation about a common axis,
said members having oppositely facing annular arcuate surfaces,
at least one roller contacting said surfaces,
and means for supporting said roller with the axis thereof intersecting the common axis of said members,
the periphery of said roller having a generally conical configuration,
said annular surfaces of said members having a configuration such that lines tangent to the periphery of the roller and the races converge at the intersection of the axes of rotation of the roller and the common axis of the members at all positions of the roller,
said means for supporting said roller permitting axial and lateral movement of said roller in a plane radial to the common axis of said members to conform to the noncircular contour of said annular surfaces,
said means for supporting said roller including trunnion means for supporting said roller for rotation about an axis transverse to the axis of said roller and piston means associated with said trunnion means urging said trunnion means in the direction of said transverse axis,
said means for supporting said roller comprising hydraulic means for applying a force proportional to the driving load on said piston means to urge said roller in the direction of the roller axis,
and diaphragm means supporting said trunnion means for movement along said transverse axis only.

2. In a friction transmission, the combination comprising
a driving member,
a driven member,
a common shaft,
means of supporting said members for rotation about the axis of said common shaft,
said members having oppositely facing annular arcuate surfaces,
a thrust bearing on said common shaft,
one of said members being mounted on said thrust bearing on said common shaft,
means for fixing said members axially so that there is an exact spacing between said annular surfaces,
at least one roller contacting said surfaces,
means for supporting said roller with the axis thereof intersecting the common axis of said members,
said means of supporting said roller having a tilt axis in a plane normal to the common axis of said members,

the periphery of said roller having a generally convex conical configuration,

said annular surfaces of said members having a configuration such that lines tangent to the periphery of the roller and the annular surfaces converge at the intersection of the axis of rotation of the roller and the common axis of the members at all positions of the roller,

said means of supporting said roller permitting axial and lateral movement to conform to the non-circular contour of the annular surfaces,

means of applying a force on said roller in the direction of the roller axis,

and resilient means for maintaining said tilt axis in a fixed location with respect to the axial location of said members resulting in equal contact pressures of the roller on both members.

4,126,053

V-BELT

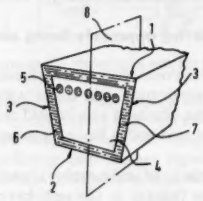
Mario Cicognani, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Apr. 25, 1977, Ser. No. 790,809

Claims priority, application Italy, May 7, 1976, 23047 A/76

Int. Cl.[2] F16G *1/00, 5/00*

U.S. Cl. 74—231 P **4 Claims**



1. A V-belt having a body made from an elastomeric material and comprising a traction resistant insert formed by a plurality of small cords coplanar and parallel one to the other, which extends in the direction of the larger dimension of the belt and a covering for the belt surface, said covering, at least in the zones of the belt flanks, corresponding to that position of the belt body which works under compression and being constituted by at least one layer of elastomeric material having fibers embedded therein, which fibers are disposed perpendicular to the longitudinal plane of symmetry of the belt itself, characterized by the fact that the fibers embedded in the elastomeric material covering the belt body are treated with a polyisocyanate solution.

4,126,054

CONTROL MEANS

William D. Langford, Stow; Dale F. Leuenberger, Cuyahoga Falls, and John J. LeBlanc, Kent, all of Ohio, assignors to Incom International Inc., Pittsburgh, Pa.

Filed Mar. 8, 1976, Ser. No. 664,490

Int. Cl.[2] F16D *7/00;* **G05G** *5/18*

U.S. Cl. 74—475 **21 Claims**

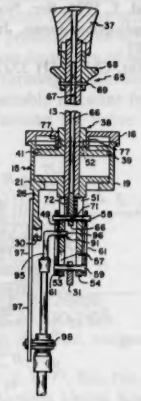
1. A control means comprising

A. a housing having an opening therein;

B. a control lever pivotally mounted to said housing and including a lever arm extending through the opening in said housing and a lever actuator having at least one receiving means adpated to receive means for transferring motion between said actuator and a device to be controlled, said control lever including pivot means between said lever arm and lever actuator for mounting said control lever to said housing;

C. a quadrant plate mounted to said housing and including a substantially arcuate opening having at least one detent in the periphery of the opening; and

D. a lock-out means connected to said lever actuator and having detent engagement means for engaging the detent



of said quadrant plate, said lock-out means including means for biasing said detent engagement means with respect to said detent and means for moving said lock-out means against said biasing means.

4,126,055

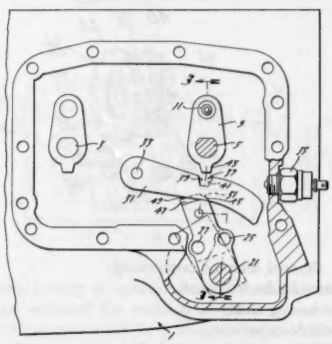
TRANSMISSION REVERSE INTERLOCK

John R. Forsyth, Warren, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 5, 1977, Ser. No. 822,111

Int. Cl.[2] G05G *5/10*

U.S. Cl. 74—476 **10 Claims**



1. A control mechanism for a multiple speed transmission of the type having a housing with first and second speed gears therein selectively coupled to an output shaft by a slideable member located therebetween, the slideable member adapted when in a neutral position between said gears to be engaged by a movable reverse idler gear to provide reverse drive, said control mechanism comprising a slideable member actuating member for moving said slideable member into coupling engagement with said first and second speed gears, a locking member pivotally mounted on said housing, a reverse idler actuating member for moving said reverse idler gear into engagement and disengagement relation with said slideable member actuating member, said locking member being movable between a locking position in which said slideable member actuating member is engaged thereby and locked against substantial movement and a blocking position in which said re-

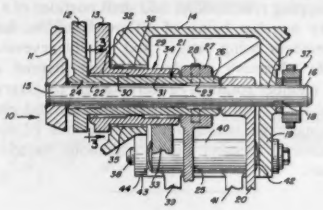
verse actuating member is blocked against movement into a position in which said reverse idler gear is engaged with said slideable member, and cam means on said reverse idler actuating member engaging said locking member and adapted to move said locking member to locking position when said reverse idler gear is moved into engagement with said slideable member and the latter is in said neutral position, said reverse idler actuating member being blocked by said locking member against movement towards a position in which said reverse idler gear is in engagement with said slideable member when said slideable member is coupled to either said first or second gear.

4,126,056

CONTROL LEVER ASSEMBLY

William J. Brown, Naperville, and Orson K. Kelly, Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 11, 1977, Ser. No. 814,594
Int. Cl.[2] G05G *1/00*
U.S. Cl. 74—491 **9 Claims**



1. In a manually operable machine having a plurality of selectively operable mechanisms, and a support, an improved control lever assembly comprising:

a first shaft;

first mounting means for mounting a first portion of said first shaft to said support for rotation about the axis thereof;

a first lever connected to said first shaft for manually rotating said first shaft about said axis;

a tubular second shaft;

second mounting means for mounting said second shaft coaxially about said first shaft for independent rotation of said second shaft about said axis;

a second lever connected to said second shaft for manually rotating said second shaft about said axis;

a tubular third shaft;

third mounting means for mounting said third shaft coaxially about said second shaft for independent rotation of said third shaft about said axis;

a third lever connected to said third shaft for manually rotating said third shaft for rotation about said axis;

fourth mounting means for mounting said third shaft to said support at a position spaced axially from said first portion of the first shaft, said control lever assembly being rotatably supported by the rotatable mounting of each of different shafts thereof to a single one of different axially spaced portions of the support; and

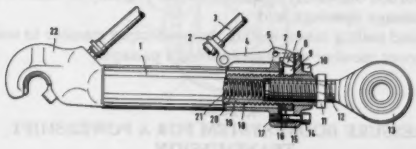
connecting means extending between said shafts and said mechanisms for operating said mechanisms selectively as a result of selective rotation of said shafts by selective manipulation of said levers.

4,126,057

ADJUSTABLE LENGTH UPPER GUIDE MEMBER

Wilhelm von Allwörden, Erbach i.O., and Hubert Geisthoff, Lohmar, both of Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Mar. 21, 1977, Ser. No. 779,615
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619031
Int. Cl.[2] G05G *1/04*
U.S. Cl. 74—586 **9 Claims**



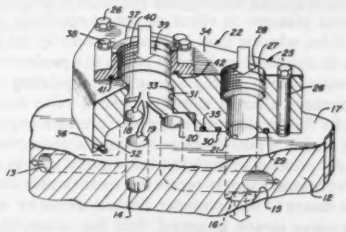
1. An adjustable length upper guide member for the hitch attachment of a tractor comprising an outer tubular guide element and an inner relatively displaceable guide element telescopingly positioned therein, said inner guide element having annular grooves on its outer surface, a housing on said outer guide element, a pair of jaws pivotally mounted within said housing to define first and second arms on each jaw, the first arms of said jaw being engageable with the annular grooves on said inner guide element, said second arms defining actuating cams facing each other, and a lever having a longer end extending outwardly of said housing and one end extending into said housing and an eccentric portion on said one end with two sides within said housing, one of said sides engageable against the inner surface of said housing and the other of said sides engageable with the actuating cams of said jaws such that when the long end of the lever is pivoted said one side of said eccentric portion will apply a force urging the other of said sides against said actuating cams of the jaws to disengage the jaws from the annular grooves on said inner guide element.

4,126,058

FLUID FLOW DIVIDER

Robert L. Shelby, Chillicothe, Ill., and Delbert G. Nelson, West Bountiful, Utah, assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 18, 1977, Ser. No. 816,578
Int. Cl.[2] F16H *57/02*
U.S. Cl. 74—606 R **8 Claims**



1. In a power transmission mechanism having a case provided with a plurality of fluid flow passages opening through a wall portion thereof in a plurality of distributed axially parallel openings, the improvement comprising:

connecting means for connecting a fluid flow conduit to said wall portion and defining a through passage providing substantially direct fluid flow communication between said fluid flow conduit and said openings in said wall portion, said through passage having upper and lower portions, the cross section of said lower portion being larger than the portion of the case through which said

openings extend to permit a portion of the fluid flow to pass indirectly from the portion of the enlarged lower portion of the through passage outwardly of said openings into said openings, said upper portion overlying at least a portion of each of said openings and having a cross section smaller than that of said lower portion, said connecting means including a cover member removably secured to said wall portion and a connecting member removably secured to said cover member;

first sealing means sealing the connecting means to said wall portion outwardly of and about said plurality of fluid flow passage openings; and

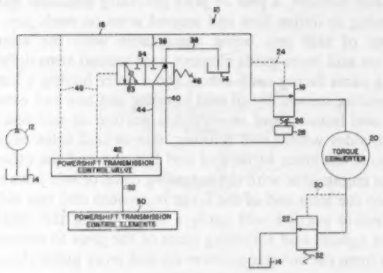
second sealing means sealing the connecting member to said cover member about said through passage.

4,126,059

PRESSURE BOOST SYSTEM FOR A POWERSHIFT TRANSMISSION

Alfred S. Smemo, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Oct. 18, 1976, Ser. No. 733,319
Int. Cl.[2] F16H *47/00*
U.S. Cl. 74—730 **7 Claims**



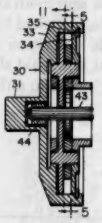
1. A hydraulic fluid control system, comprising: a sump; a pressure regulating valve; a fixed displacement pump having an inlet connected to the sump and an outlet connected to the pressure regulating valve; said pressure regulating valve including pressure-responsive regulating pressure adjusting means operative, in the absence of a control pressure, to effect an inactive-condition in the regulating valve wherein fluid delivered by the pump passes through the regulating valve without being regulated thereby, and operative in the presence of the control pressure to effect an active condition in the regulating valve wherein fluid delivered thereto by the pump is caused to be regulated such that it builds to a predetermined minimum value before passing through the regulating valve; pressure consumer element means; a control valve means; a source of pilot fluid under pressure; a pilot pressure responsive boost valve means; a pilot pressure line means connecting the source of pilot pressure to the boost valve means by way of the control valve means; a supply-return line means connecting the boost valve means to the consumer element means by way of the control valve means; a control fluid line connecting the boost valve means to the regulating pressure adjusting means; a feed line connecting the pump to the boost valve means; an exhaust line connecting the boost valve means to the sump; said boost valve means being pressure-shiftable from an unactuated position wherein it connects the supply-return line means and the control line to the exhaust line, to an actuated position, wherein it connects the feed line to the supply-return means; and said control valve being operable between a first position wherein it blocks the flow of fluid from the source of pilot fluid pressure to the boost valve means and a second position wherein it connects the source of pilot fluid pressure to the boost valve means.

4,126,060

FRICTIONAL PLANETARY TRANSMISSION

Arthur E. Rineer, P.O. Box 115, Beulah, Mich. 49617

Filed Sep. 13, 1976, Ser. No. 722,697
Int. Cl.[2] F16H *13/06*
U.S. Cl. 74—798 **4 Claims**



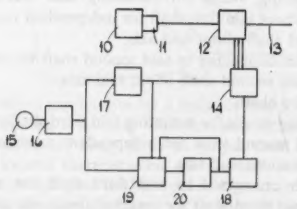
1. A planetary transmission system including ring means; a central annular bearing member coaxial with said ring means; a plurality of angularly-spaced planetary members having portions engaging said ring means and said central member, respectively, said planetary members having oppositely extending shaft portions engaging the inside surfaces of axially spaced sections of said ring means, said planetary members having a disc portion engaging said central annular bearing member axially between said ring sections, said planetary members being disposed with said disc portions in axially spaced overlapping relationship, said shaft portions of a particular planetary member being of different lengths, and said planetary members being similar and axially reversed with respect to the planetary member adjacent thereto; and an intermediate member rotatively receiving said planetary member and fixed with respect to the axis thereof, said planetary member having engagement with at least one of said ring means and central member on a continuous flared surface under pressure.

4,126,061

SIGNAL FAILURE CIRCUIT FOR AUTOMATIC TRANSMISSIONS

Richard L. Fry, London, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 19, 1977, Ser. No. 760,576
Claims priority, application United Kingdom, Jan. 31, 1976, 3885/76
Int. Cl.[2] B60K *41/18*
U.S. Cl. 74—866 **13 Claims**



1. A signal failure circuit for incorporation in a control circuit of a vehicle automatic transmission system, the control circuit including switch circuits operable to effect engagement of respective gearratios of the transmission in response to an input signal which varies in accordance with the speed of the output shaft of the transmission and which is derived from a generator which produces a fluctuating signal the frequency of which varies with the speed of the output shaft, the signal failure circuit comprising:

an interval timer which provides an output in the event that the signal from the generator falls to zero for longer than a first predetermined time;

a monostable circuit responsive to the output from the interval timer and which is switched by said output to its unstable state to activate a safety circuit in the control circuit, said monostable circuit remaining in its unstable state for a second predetermined time after the output from the interval timer has disappeared; and

means for modifying said first predetermined time in accordance with the output of a frequency to voltage converter which is supplied with said fluctuating signal, wherein said interval timer includes a capacitor, a charging circuit for said capacitor, means controlled by said fluctuating signal for discharging said capacitor and means responsive to the voltage developed across said capacitor for providing said output.

4,126,062

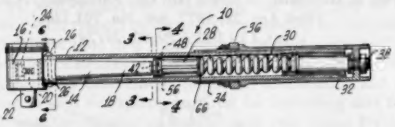
TORQUE WRENCH

Donald F. Solomon, Newport Beach, Calif., assignor to JO-Line Tools, Inc., Anaheim, Calif.

Filed Aug. 25, 1977, Ser. No. 827,627

Int. Cl.[2] B25B *0/00*

U.S. Cl. 81—52.4 R **8 Claims**



1. A torque wrench comprising:

a hollow tubular lever arm;

an elongated hinge member housed within said hollow lever arm and carrying a load engaging means at one end thereof; and rotatably connected to said tubular lever arm proximate thereto, whereby torque can be applied from said lever arm to said load engaging means, and said hinge member has a channel with inclined walls formed across the full width of an end surface thereof running normal to the direction of elongation and located remote from said load engaging means and said channel is transversely oriented relative to the plane of application of torque

a pivot positioned within said tubular lever arm and shaped in the form of a rectangular prism and adapted for movement between a seated position in said channel and a position angularly displaced from said seated position;

a plunger member positioned within said tubular lever arm and formed with an end surface perpendicular thereto with a channel defined therein transversely oriented relative to the plane of application of torque and extending the full width of said end surface at the end thereof nearest said load engaging means and arranged to receive said pivot,

biasing means anchored relative to said tubular lever arm and positioned to resiliently bias said plunger member toward said load engaging means to urge said pivot toward said seated position with a predetermined force; and

pivot retaining means positioned within said tubular lever arm to define lateral constraints to inhibit movement of said pivot normal to the plane of application of torque.

4,126,063

WRENCH SOCKETS

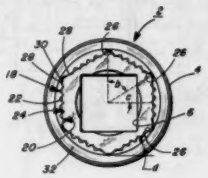
Richard R. Palmer, 22 Parkview Dr., Painesville, Ohio 44077

Continuation of Ser. No. 631,834, Nov. 14, 1975, abandoned.

This application Apr. 1, 1977, Ser. No. 783,681

Int. Cl.[2] B25B *13/06*

U.S. Cl. 81—121 R **4 Claims**



1. A wrench socket device for transmitting a torque load to a nut-type fastener comprising,

an elongated body having a polygonal shaped bore extending axially therethrough,

said bore defined by a plurality of sets of equidistantly spaced and radially extending inner tapered serrations disposed in a substantially common plane for surface-to-surface engagement with corresponding generally planar side surfaces of a fastener across substantially the entire surface thereof,

a plurality of arcuate concavities disposed generally intermediate each of the sets of serrations adapted for reception of the corners of said fastener for transmitting a torque load thereto in a direction away from the corners of said fastener,

said concavities each include outer corners in the form of flutes defined by root sides which converge in apex ends,

the root sides of each of said flutes converge in an apex end which is disposed in the general plane of the apex ends defined by said serrations, and

the sides of said flutes merged with the corresponding sides of serrations by an angle of approximately 30°,

said serrations define a plurality of lands disposed at an angle of approximately 60° relative to the geometric center of said bore such that approximately $\frac{1}{6}$ of a sector provides an angle of approximately 30° in respect to the mid-point of an associated one of said concavities,

said serrations each have an included angle of approximately 60° with the bisector of the root sides of the serrations being perpendicular to the confronting pianar side surfaces of the fastener.

4,126,064

PREPARATION OF ANNULAR BLANKS FROM TUBE STOCK

Brian D. Tarrant, Gloucester, England, assignor to Formflo Limited, Cheltenham, England

Filed Jun. 15, 1977, Ser. No. 806,895

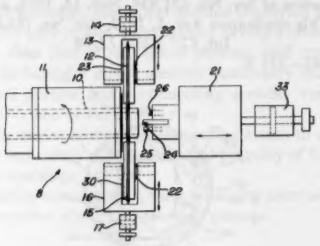
Claims priority, application United Kingdom, Jun. 15, 1976, 24819/76

Int. Cl.[2] B23B *3/00, 1/00, 3/04;* B21B *13/20*

U.S. Cl. 82—1 C **11 Claims**

1. A method of preparing an annular workpiece from tube stock comprising advancing a part-off rolling tool radially of the tube stock to a depth approximately corresponding to the

final desired bore diameter of the workpiece but stopping the tool before a length is fully severed from the tube stock, and



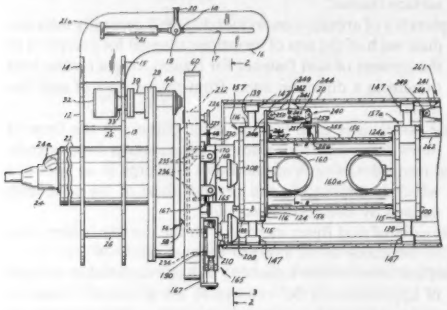
thereafter machining the inside of the partially severed length to the desired bore diameter.

4,126,065

PIPE END FINISHING APPARATUS

Edward A. Clavin, Houston, Tex., assignor to Midcon Pipeline Equipment Co., Houston, Tex.

Filed Apr. 14, 1977, Ser. No. 787,555
Int. Cl.[2] B23B *5/16*
U.S. Cl. 82—4 C **38 Claims**



1. Apparatus for use in finishing the ends of pipes, comprising first body means, means for supporting said first body means adjacent an end of a cylindrical pipe, second body means movable along said first body means axially of said pipe, means for moving said second body means along said first body means, support means carried by said second body means adapted to rotate coaxially of said pipe, means for rotating said support means about second body means and about said pipe, cutting tool means carried by said support means and movable away from and toward the axis of said pipe by cylinder means supported by said support means, and means responsive to rotation of said support means for supplying fluid to said cylinder means for moving said cutting tool means into and away from cutting engagement with the end of said pipe.

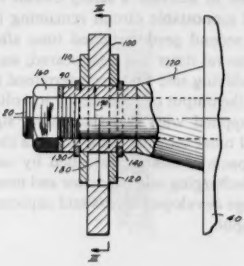
4,126,066

BRAKE LATHE HARMONIC DAMPER

John C. Wagor, and Robert W. Bradley, both of Cedar Rapids, Iowa, assignors to Kwik-Way Manufacturing Company, Marion, Iowa

Filed Sep. 12, 1977, Ser. No. 832,342
Int. Cl.[2] B23B *3/22*; F16F *15/10*
U.S. Cl. 82—4 A **2 Claims**

1. A damper for use with an arbor upon which an object could be mounted comprising a damping collar, and a cylindrically shaped spacer; said spacer being operably mounted upon the arbor so that it rotates in conjunction with the arbor and said damping collar being operably mounted upon said spacer such that said damping collar rotates freely about an axis essentially parallel to the axis of rotation of the arbor simultaneously while being free for limited movement in a plane perpendicular to the axis of rotation of the arbor such that harmonic vibration and chatter in the object is minimized; said spacer being



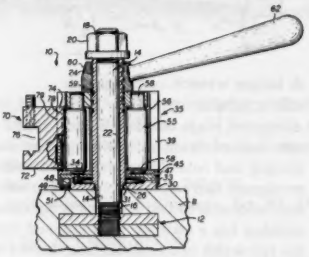
formed with a pair of grooves on opposite sides of said damping collar and a pair of snap rings receivable in said pair of grooves to limit the longitudinal motion of said damping collar; and including a pair of side plates receivable over said spacer between said snap rings and said damping collar.

4,126,067

TOOL POST

Enrico R. Giannetti, 18 Druid Hill Dr., Parsippany, N.J. 07054

Filed Apr. 28, 1977, Ser. No. 791,730
Int. Cl.[2] B23B *29/00, 29/24*
U.S. Cl. 82—36 A **8 Claims**



1. A selectively adjustable tool post for holding a plurality of tools for selective positioning of any one of the tools in operative position with respect to a work piece on a machine tool, said tool post comprising:

a base plate adapted for fixed securement at a selected location on the machine tool;

a body block having a plurality of sides, said block rotatably mounted adjacent said base plate;

interlocking means extending from said body block and said base plate, said interlocking means comprising spaced spline teeth arranged on radii extending from the center of rotation of said body block, with a set of spaced spline teeth on said block interengaging a set of spline teeth on said base plate;

ball means on the face of one of the teeth of said spline teeth to cause the teeth of one set of teeth to roll off the face on the other set of teeth into the valleys between the teeth;

setting means selectively operable to effect engagement and disengagement of said interlocking means; and

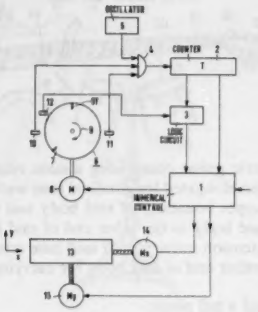
means for supporting a tool on each side of said body block.

4,126,068

NUMERICALLY CONTROLLED NIBBLING MACHINE

Günter Brömer, Spardorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 17, 1977, Ser. No. 807,731
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1976, 2628963
Int. Cl.[2] B23D *27/00;* B26D *5/20*
U.S. Cl. 83—237 1 Claim



1. In a numerically controlled nibbling machine in which the feed distance of a workpiece is limited by a release time during which a work tool is disengaged from said workpiece according to a predetermined number of strokes of the work tool per unit of time, said nibbling machine including drive means for said work tool, means for controlling the feed rate of the workpiece with respect to the work tool, means for determining said release time in a single stroke of said work tool for every number of strokes of said tool per unit of time, and means for automatically determining minimum acceleration and deceleration of said workpiece required for travelling said feed distance and for forming a desired feed rate value for said workpiece from said release time and the feed distance of said workpiece, the improvement comprising said means for determining said release time further comprising switch means disposed in the path of said work tool for generating a stop command signal for said drive means for said work tool, said determining means further comprising means for selectively transmitting said stop command signal from said switch means to said control means when a predetermined, lowest speed of said drive means for said work tool is reached and stopping said work tool at an upper dead-center position of said work tool in said nibbling machine.

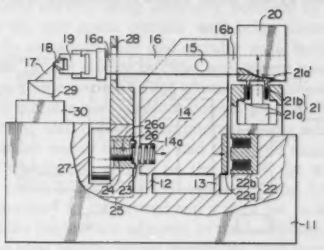
4,126,069

MICROTOME

Tomoo Shimonaka, Hiratsuka, Japan, assignor to Kabushiki Kaisha Akashi Seisakusho, Japan

Filed Aug. 9, 1977, Ser. No. 823,160
Claims priority, application Japan, Dec. 13, 1976, 51-149524
Int. Cl.[2] G01N *1/06*
U.S. Cl. 83—703 3 Claims

1. A microtome comprising:
a table;
a lever having a front end and an opposite end and fitted to the table so as to swing around a horizontal axis in a dynamically balanced state;
a knife;
a specimen holder attached to the first end of the lever opposite to the knife;
an electrically operated drive mechanism, disposed at the opposite end of the lever, for effecting the swinging of the lever so that a specimen held by the specimen holder is cut by the knife, the drive mechanism comprising a fixed magnet having a coil space, and a coil fitted to and movable with the opposite end of the lever and disposed in the coil space of the fixed magnet; and
a compensating circuit for energizing the coil, relative to the



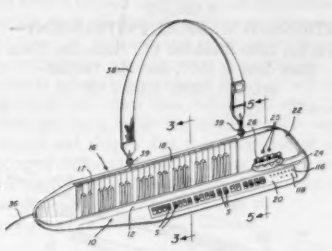
magnet, the circuit having a power supply, being interposed between the power supply and the coil, and being effective to reduce the voltage drop of the coil based on its resistance.

4,126,070

KEYBOARD MUSICAL INSTRUMENT

Jeremy R. Hill, 87 Centre St., Dover, Mass. 02030

Filed Jan. 31, 1977, Ser. No. 763,996
Int. Cl.[2] G10H *1/00*
U.S. Cl. 84—1.01 27 Claims



1. A hand-held keyboard musical device comprising;
a keyboard assembly comprising a plurality of keys,
an elongated housing having top and bottom wall surfaces, a hand-support section and a keyboard section longitudinally disposed of the support section and having an opening for accommodating the keyboard assembly,
said housing having means defining a passage therethrough in the hand-support section of the housing adjacent to the keyboard assembly and extending between top and bottom wall surfaces,
said passage for receiving the player's hand for enabling hand support of the device,
and means for supporting the housing from the player's body.

4,126,071

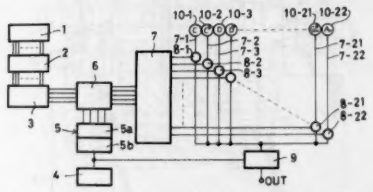
APPARATUS FOR AN AUTOMATIC MUSICAL PERFORMANCE

Kazuo Kamata, Hino, and Yasushi Yamamoto, Okegawa, both of Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu; Sanyo Denki Kabushiki Kaisha, Moriguchi and Tokyo Sanyo Kabushiki Kaisha, Funma, all of, Japan

Filed Mar. 2, 1977, Ser. No. 773,542
Claims priority, application Japan, Mar. 8, 1976, 51-24196; Mar. 9, 1976, 51-24621
Int. Cl.[2] G10H *1/00*
U.S. Cl. 84—1.03 6 Claims

1. Apparatus for an automatic musical performance compris-

ing: adder means having binary-coded signal outputs representing added amounts; means for obtaining a digital signal indicating a root tone by depression of a key; a memory circuit providing digital signals; said first-mentioned digital signal being added by said adder means in sequential order with said



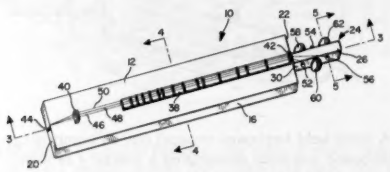
digital signals from said memory circuit; a rhythm pulse generator with output pulses for driving said memory circuit; plural tone source signal passing circuits; plural gate circuits interposed in said plural tone source signal passing circuits; said plural gate circuits being opened and closed by said binary coded signals from said outputs of said adder means.

4,126,072

STRINGED MUSICAL INSTRUMENT

Robert A. Taylor, 3686 Richbriar Ct., Nashville, Tenn. 37211

Filed May 3, 1977, Ser. No. 793,285
Int. Cl.² G10D *1/00, 1/08*
U.S. Cl. 84—173 **9 Claims**



4. A stringed musical instrument including:

(a) an elongated body of one-piece wood board construction, said body being of substantial thickness and having top and bottom surfaces,

(b) the bottom surface of said body being hollowed out to provide a cavity extending a substantial portion of the body's length, leaving a thin top surface serving as a sounding board above the cavity,

(c) one end of said body beyond the cavity being reduced in width to provide a peghead,

(d) said peghead being provided with transverse bores,

(e) pegs extending through the transverse bores of said peghead and in frictional engagement with the latter,

(f) a fingerboard mounted longitudinally of the top surface of said body above the cavity,

(g) bridge means mounted on the top surface of said body in alignment with said fingerboard and adjacent opposite ends thereof,

(h) a plurality of strings extending longitudinally of said body above said fingerboard and supported by said bridge, and

(i) means engaged with one end of said body for engagement by one end of said strings,

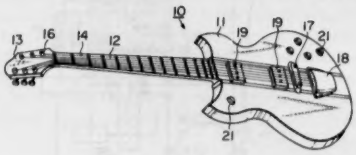
(j) the opposite ends of said strings being engaged with said pegs for holding said string under tension.

4,126,073

ELECTRIC GUITAR

Youjiro Takabayashi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jul. 6, 1976, Ser. No. 702,424
Claims priority, application Japan, Jul. 18, 1975, 50-99070[U]; Jul. 18, 1975, 50-99071[U]
Int. Cl.² G10D *3/00, 1/08*
U.S. Cl. 84—293 **7 Claims**



1. An electric guitar comprising a main resonating body; a neck having an elongated longitudinal base section inset within at least the upper boundary of said body and extending from one end of said body to the other end of said body; said neck having an extension unitary with said base member extending beyond said other end of said body for carrying a head at one end thereof;

a bridge and a tail piece;

at least one interconnecting member extending along the said base section of said neck and interconnecting said base of said neck to said body; said member being made of a material harder than that of said body;

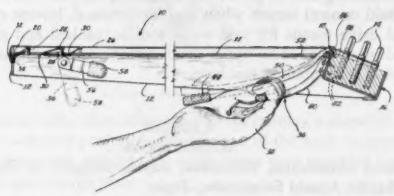
and the edge thereof being substantially coplanar with the portion of the upper boundary adjacent thereof; a mounting for each of said bridge and tail piece; said bridge and tail piece being secured by said mounting to said edge of said interconnecting member.

4,126,074

VIOLIN HARP

Eric G. Lundquist, 2340 22nd St., Rockford, Ill. 61108

Continuation-in-part of Ser. No. 704,060, Jul. 9, 1976, abandoned. This application Mar. 9, 1978, Ser. No. 884,859
Int. Cl.² G10D *1/12, 3/12*
U.S. Cl. 84—313 **5 Claims**



1. A musical instrument comprising:

a body;

a first bridge transversely mounted to one end of said body;

a second bridge mounted to the opposite end of said body;

first and second string mounting means positioned outward of said first and second bridges, respectively;

a plurality of strings tautly suspended between said bridges by said mounting means, said second string mounting means comprising two openings in said body, through which at least one of said strings is looped so that a single string can double back to form adjacent notes on said instrument; and

lever means for varying the tension of said strings while the instrument is being played, said lever means including a flanged portion which extends between said first bridge and at least one of said strings so that the tension in at least

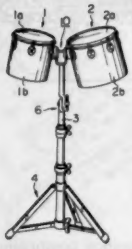
one of said strings can be varied by changing the angular position of said lever means.

4,126,075

SUPPORTING DEVICE FOR DRUMS AND LIKE MUSICAL INSTRUMENTS ON A STAND

Makoto Kurosaki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jan. 5, 1977, Ser. No. 756,854
Claims priority, application Japan, Jan. 12, 1976, 51/1864
Int. Cl.[2] G10G *5/00*
U.S. Cl. 84—421 **75 Claims**



1. A supporting device for drums and like musical instruments comprising an upper mounting assembly, a lower mounting assembly and a standard, said upper mounting assembly including an attachment fixable to said standard, an elastic element to be inserted between said attachment and any one of said musical instruments, and means for coupling said one musical instrument to said attachment with said elastic element disposed therebetween, said lower mounting assembly including a holder block slidable along said standard, and means for fixing said holder block at any selected position along said standard.

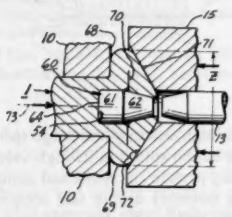
47. A supporting device for drums and like musical instruments comprising a standard, an upper mounting assembly connecting any one of said musical instruments to said standard at a required disposition, and a lower mounting assembly, said lower mounting assembly including a holder block slidable along said standard, and means for fixing said holder block at a selected position along said standard, thereby supporting said one musical instrument at the side thereof.

4,126,076

RIVET FASTENER SYSTEM

Irwin E. Rosman, 23710 Clarendon St., Woodland Hills, Calif. 91364

Division of Ser. No. 549,330, Feb. 12, 1975, Pat. No. 3,995,406, which is a continuation-in-part of Ser. No. 360,533, May 15, 1973, abandoned, and Ser. No. 480,760, Jun. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 321,457, Jan. 5, 1973, abandoned. This application Apr. 29, 1976, Ser. No. 681,431
Int. Cl.[2] B21D *39/00*; F16B *19/08*
U.S. Cl. 85—37 **28 Claims**



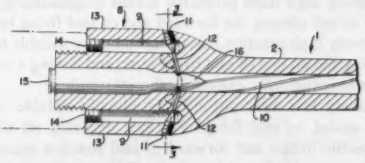
1. A two-piece rivet assembly having a central axis, and comprising: a rivet having a preformed head at a first end, a solid shank with a substantial length contiguous to and integral with said preformed head, a tubular upsettable portion contiguous to and integral with the said solid shank at the other end of said rivet, the solid shank and the tubular upsettable portion being externally bounded by an outside circular wall, the tubular upsettable portion being internally bounded by an inside circular wall, said inside circular wall being unstepped and substantially cylindrical, the said circular walls being coaxial, no diameter of said outside circular wall where it bounds the tubular upsettable portion being greater than the diameter of the outside circular wall where it bounds the solid shank, the inside circular wall bounding an internal recess which opens onto said other end of the rivet, said other end having an end surface, a termination surface on the end of the solid shank inside the recess bounded by said inside wall and forming the bottom boundary of the recess; and a core pin in said recess having a core pin surface adjacent to the terminating surface, and having axial length, lateral dimensions, and strength sufficient for maintaining a concentric and round upset head configuration on said rivet and preventing internal buckling of the tubular upsettable portion when sufficient axial compressive force is exerted on said end surface to upset said tubular upsettable portion and form an upset head, the said axial length, lateral dimension, and strength of said core pin being sufficient to support the upset head against rollover of said upset head upon the exertion of an axial tensile force on said upset head, the core pin being sufficiently rigid as substantially to retain its own shape under rivet upset forces exerted during formation of the upset head, portions on said core pin and on said inside wall being so disposed and arranged as to overlap each other after the upset head is formed to prevent axial separation of the core pin from the rivet, all abutting surfaces of the core pin and of the rivet being so disposed and arranged relative to the axis that any compressive axial force transmitted from the core pin to the tubular upsettable portion of the rivet will be predominately directed only other than radially outward, that portion of the core pin lying inside the inside circular wall being so proportioned and shaped that it is incapable of transmitting upset forces to the tubular upsettable portion the core pin being in perimetral contact with said inside circular wall for at least a portion of the axial length of the core pin.

4,126,077

RECOIL REDUCING SYSTEM FOR RIFLES, GUNS, CANNONS AND THE LIKE

Henry R. Quesnel, R.D. #1, Rutland, Vt. 05701

Filed Jan. 18, 1977, Ser. No. 760,393
Int. Cl.[2] F41F *3/02*
U.S. Cl. 89—1.704 **2 Claims**



1. A recoil reduction system for ball and powder type weapons comprising:

a plurality of gas storage chambers surrounding at least a part of the barrel structure of a ball and powder type weapon in the area of the breech of said ball and powder type weapons, each one of said plurality of gas storage chambers being cylindrical in shape and being so positioned that the axis of each said cylindrical shaped gas chamber is parallel with the axis of said breech;

a plurality of narrow channels equal in number to said plurality of gas storage chambers, a different one of said plurality of narrow channels forming a passageway be-

tween each one of said plurality of gas storage chambers and the bore of said ball and powder type weapon, said narrow channels being so located that each one of said plurality of narrow channels communicates with said bore in said breech area of said ball and powder type weapon but in front of the area of said breech in which the powder of said ball and powder is located, whereby gases from said bore will, after said ball and powder type weapon is fired, flow through said plurality of narrow channels into said plurality of chambers and out of said plurality of chambers back into said bore when the pressure in said bore is less than the pressure in said plurality of chambers; and

a plurality of adjustable needle valves equal in number to said plurality of chambers, each one of said adjustable needle valves having a point at one end, a different one of said plurality of adjustable needle valves extending into each one of said plurality of gas storage chambers such that said point on said one end of each of said plurality of adjustable needle valves is aligned with the said narrow channel of said plurality of narrow channels associated with the said gas storage chamber into which that adjustable needle extends, each one of said needle valves being continuously and independently adjustable.

4,126,078

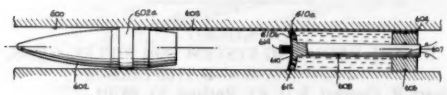
LIQUID PROPELLANT WEAPON SYSTEM

Eugene Ashley, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Division of Ser. No. 707,143, Jul. 20, 1976, Pat. No. 4,069,739. This application Oct. 4, 1977, Ser. No. 839,476

Int. Cl.[2] F41F *1/04;* F42B *9/12*

U.S. Cl. 89—7 **2 Claims**



1. A weapon system comprising:

a gun having a firing bore;

a round of ammunition disposed in said firing bore including:

a relatively high mass projectile means longitudinally slidable in and closing the forward end of said firing bore;

a relatively high reaction mass longitudinally slidable in and closing the aft end of said firing bore, and having a central bore longitudinally extending therethrough;

a relatively low mass piston longitudinally slidable within and sealed to said firing bore and disposed aft of said projectile means and forward of said reaction mass, and having a central rod longitudinally extending into and sealed to said central bore of said reaction mass,

said piston having a forward face of relatively large cross-sectional area and an aft face of relatively small cross-sectional area, and a passageway communicating said aft face with said forward face, and a pressure sensitive obturating means obturating said passageway and adapted to open said passageway upon a predetermined pressure being applied to said forward face;

said projectile means, said firing bores and said piston defining a combustion chamber;

said reaction mass, said firing bore, said piston rod and said piston defining a liquid propellant storage area.

4,126,079

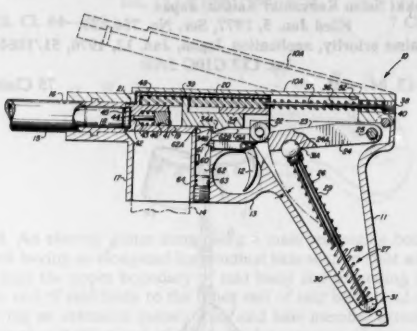
BOLT ACTUATING MECHANISM USEABLE WITH FLOATING FIRING PIN

Walter E. Perrine, P.O. Box 621, Elko, Nev. 89801

Filed Sep. 1, 1977, Ser. No. 829,791

Int. Cl.[2] F41D *11/06*

U.S. Cl. 89—190 **18 Claims**



1. A bolt action weapon comprising:

a frame,

a handle on said frame,

a hollow barrel having a firing chamber,

a bolt movable in said frame axially to and from the firing chamber of said barrel,

said bolt having cam means on the end thereof opposite to said firing chamber for moving over a cam surface,

an elongated link connected at one end to said frame and providing a cam surfaces along its length for engagement by said cam means,

said link being movable into contact with said cam means to retain said bolt when it has been moved to said firing chamber, and

a compression means mounted in said handle for biasing said link into contact with said bolt and for controlling the movement of said link as it collapses by causing its free end to swing downwardly away from said bolt into said handle.

4,126,080

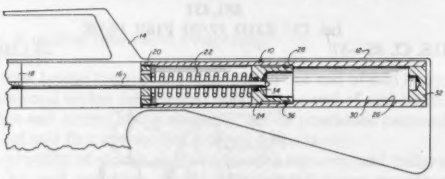
HIGH VELOCITY ANTI-SURGE SPRING ASSEMBLY

George L. Reynolds, Cambridge, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 29, 1977, Ser. No. 792,271

Int. Cl.[2] F41D *11/12*

U.S. Cl. 89—199 **5 Claims**



1. A hydraulic high velocity anti-surge spring assembly for replacing a long action spring in its high velocity application with reciprocating parts in automatic and semiautomatic weapons, said spring assembly urging said reciprocating parts to their in-battery position, said long action spring having an undesirable spring surging characteristic, said assembly reducing the length and velocity of spring travel of a shorter spring

therein without reducing the cyclic rate of said reciprocating parts, said system comprising:

a chamber having a moveable piston therein,

a rod affixed to reciprocating parts and insertable and moveable through said piston,

said chamber having a fluid therein,

a spring urging said piston against said fluid,

said piston, upon movement against said fluid, expelling said rod from said fluid within said chamber.

4,126,081

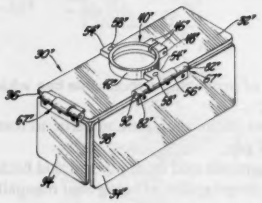
MACHINE SHIELD

Paul A. Zdeb, 4818 Bernice, Warren, Mich. 48091

Filed Apr. 4, 1977, Ser. No. 784,575

Int. Cl.[2] B23C *9/00*

U.S. Cl. 90—11 R **4 Claims**



1. A safety shield specially adapted for use with machine tools having a spindle rotatable about a normally vertical axis, and particularly of the milling machine type having a non-rotatable element, such as an extendible quill, and a tool-driving spindle rotatably mounted coaxially within the quill so as to be extendible toward the work, said shield comprising a plurality of flat transparent shield panels, said panels including an anchor panel and at least one movable panel, said anchor panel having an opening therein to receive the non-rotatable element and means for securing said anchor panel to the non-rotatable element, and hinge means securing each movable panel to said anchor panel, whereby each of said movable panels is pivotally secured to said anchor panel, said anchor panel securing means comprising a collar secured to said anchor panel at the opening therein so as to receive the non-rotatable element, each of said movable panels being secured along one edge to an edge of said anchor panel, said collar having at least one hinge member connected to and extending laterally therefrom to the edge of said anchor panel to which one of said movable panels is secured, said movable panel having a cooperating hinge member secured to the edge thereof, thread means formed on one of said hinge members, said hinge means including, in addition to said hinge members, at least one hinge pin and spring means, said pin having thread means adapted to cooperate with said thread means formed on one of said hinge members to compress said spring means and place a frictional load on said hinge means, whereby said hinge means retains said movable panel in any position to which it is moved.

4,126,082

TRAVEL-BRAKE CONTROL SYSTEM

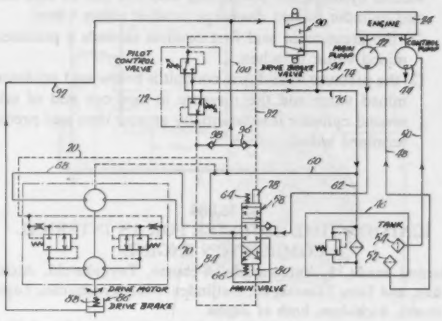
Ronald J. Klitz, Mosinee, Wis., assignor to J. I. Case Company, Racine, Wis.

Continuation of Ser. No. 578,111, May 16, 1975, abandoned. This application Aug. 15, 1977, Ser. No. 824,852

Int. Cl.[2] F15B *15/26*

U.S. Cl. 91—41 **3 Claims**

1. In a vehicle having an earthworking implement supported thereon and a plurality of hydraulic motor means for operating various components including ground engaging means for supporting and driving said vehicle, a control system comprising: a hydraulic fluid reservoir; main hydraulic circuit means including one of said motor means, said reservoir, main pump means for supplying fluid under pressure from said reservoir to said one main motor means, and fluid actuated main valve means actuatable to control flow of pressurized fluid to and from said one motor means; control circuit means including said reservoir, said main valve means, control pump means for supplying fluid under pressure to actuate said main valve means, and manually operated control valve means having conduit means connected to said main valve means for controlling flow of fluid under pressure to and from said main valve means to control actuation thereof; selectively actuatable brake means associated with said one motor means; brake control means for selectively controlling actuation of said brake means independently of operation of said control valve means, said brake control means including a brake conduit



leading from said brake means to said reservoir with a manually actuated brake valve in said brake conduit having a first position connecting said brake means to said reservoir and a second position connecting said control pump means to said brake means, bypass means hydraulically connecting said conduit means to said brake conduit when said brake valve is in said first position for directing fluid flow in said control circuit means to said reservoir to preclude actuation of said main valve means, said bypass means preventing hydraulic flow between said conduit means and said brake conduit when said brake valve is in said second position and said control pump means is operative.

4,126,083

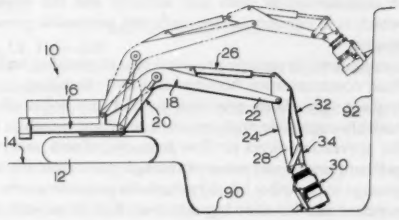
ATTITUDE CONTROL FOR IMPLEMENT

Willard J. Haak, Peoria; Howard A. Marsden, Pekin, and Orrin A. Stemler, East Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 7, 1977, Ser. No. 766,102

Int. Cl.[2] B66F *9/00*

U.S. Cl. 91—176 **9 Claims**



1. A cylinder control system comprising:

first and second fluid cylinders,

means for applying fluid under pressure to said cylinders and including a first valve having a first position blocking flow of fluid under pressure to said first cylinder and a second position allowing flow of fluid under pressure to one end of said first cylinder and including a second valve having

a first position blocking flow of fluid under pressure to said second cylinder and a second position allowing flow of fluid under pressure to one end of said second cylinder,

means including a first conduit operatively and fluidly connecting the other ends of said first and second cylinders and including means for allowing fluid flow through said conduit from said first to said second cylinder and preventing fluid flow through said conduit from said second to said first cylinder,

a low-pressure discharge conduit,

normally closed bypass valve means responsive to fluid pressures in said first conduit and in said one end of said second cylinder for connecting said one end of said second cylinder to said discharge conduit either when:

(1) the pressure in said first conduit exceeds a predetermined value, or when:

(2) the pressure in said first conduit is below said predetermined value and the pressure in said one end of said second cylinder is substantially greater than said predetermined value.

4,126,084

IGNITION TIME ADJUSTER FOR AN INTERNAL COMBUSTION ENGINE

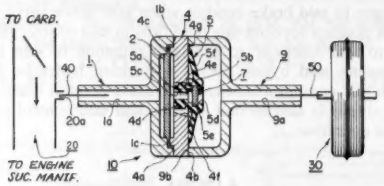
Masami Inada, 1, Futamuradai 6-chome, Toyoake-shi, Aichi-ken, and Toru Tamura, 60, Daijinden, Maenayashi-cho, Toyota-shi, Aichi-ken, both of Japan

Continuation of Ser. No. 513,147, Oct. 8, 1974, abandoned. This application Aug. 6, 1976, Ser. No. 712,317

Claims priority, application Japan, Oct. 11, 1973, 48/114096

Int. Cl.[2] F15B *21/10*; F02P *5/10*; F16K *17/32*

U.S. Cl. 91—443 **2 Claims**



1. A pneumatic control valve interposed between a pneumatic pressure soure and an actuator for controlling the air flow there between, comprising:

a housing including a bore therein and a radially extending partition wall having surfaces disposed within said bore for dividing said bore into two chambers, one of which is in communication with said actuator and the other of which is in communication with said pneumatic pressure source;

a communication passage provided in said partition wall for fluid communication between said two chambers;

a resilient valve body provided on said partition wall and sealably engagable with one surface of said partition wall for preventing direct air flow from one of said pneumatic pressure source and actuator through said communication passage to the other of said pneumatic pressure source and actuator and for allowing direct air flow from said other of said pneumatic pressure source and said actuator through said communication passage to said one of said pneumatic pressure source and said actuator;

said resilient valve body including an axial bore penetrating therethrough and an orifice means, sealably mounted in said axial bore, for retarding air flow through said axial bore from said one of said pneumatic pressure source and actuator through said axial bore to said the other of said pneumatic pressure source and said actuator.

4,126,085

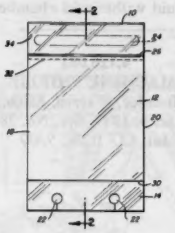
METHOD OF PRODUCING A RECLOSABLE BAG

John C. Mowli, 2032 W. Jarvis, Chicago, Ill. 60645, and Harry Bala, 2259 N. Kedzie, Chicago, Ill. 60647

Filed Feb. 22, 1977, Ser. No. 770,602

Int. Cl.[2] B31B *49/04, 1/90*

U.S. Cl. 93—35 R **8 Claims**



3. A method of producing a reclosable bag which comprises the steps of:

folding a sheet of thermoplastic material to form a front ply and a back ply;

interposing between said front ply and said back ply a metallic closure strip capable of being bent manually and retaining the bent shape;

without attaching said closure strip to the plies applying a heated die across said front ply and back ply to form a heat sealed pocket in which said closure strip is located, the heated die being applied across the width of the plies whereby the sides of the heat sealed pocket resulting therefrom are open; and

thereafter closing sides of the bag by heat sealing along the length of the plies other than the pocket whereby the pocket sides remain open.

4,126,086

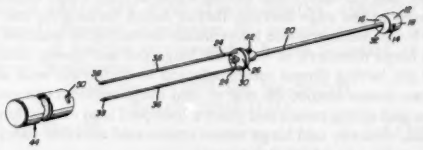
FORK FOR BARBECUING AND OPEN FIRE COOKING

Edmond J. Valade, Fallon, Nev., assignor to Win, Inc., Carson City, Nev.

Filed Nov. 30, 1977, Ser. No. 856,160

Int. Cl.[2] A47J *37/04*

U.S. Cl. 99—419 **9 Claims**



1. A collapsible and self-storing food handling implement, said implement including a base, an elongated shank supported from and projecting outwardly from one side of said base, a follower mounted on said shank for adjustable positioning therealong between a retracted position closely adjacent said base and an extended position closely adjacent the outer end of said shank remote from said base, and an elongated implement member supported at one end from said follower and extending outwardly therefrom in a direction paralleling the direction in which said shank projects from said base, the free end of said implement member remote from said follower defining a food engaging implement portion, and an elongated tubular handle removably supported from said base and projecting therefrom in a direction opposite to said shank, said tubular handle being removable from said base and fully telescopingly engageable over said shank and implement member when said follower is in said retracted position, and removably engageable with said

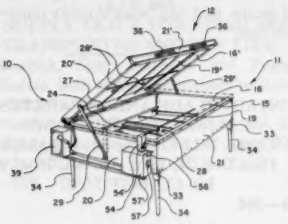
base in position extending therefrom in the same direction in which said shank projects.

4,126,087

COOKER

Willie J. McLamb, Benson, N.C. 27504

Filed Oct. 1, 1976, Ser. No. 728,753
Int. Cl.[2] A47J 27/62
U.S. Cl. 99—327 1 Claim



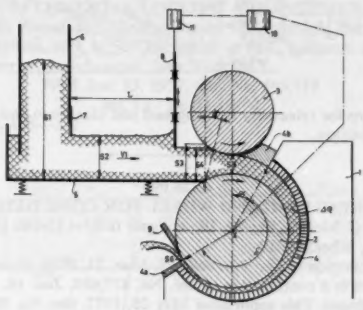
1. A cooking means comprising: a cooker having all of its structural parts constructed of stainless steel including a generally rectangular shaped frame means; downwardly projecting, generally cylindrical collar means fixedly secured to the lower portion of each of the corners of said rectangular frame means; leg means removably attached to said frame means through insertion into said collar means; double walled, opposed pairs of lower sides and ends secured to said frame means, each of said double walled, lower sides and ends defining an insulating dead air space, the exterior wall of each of said lower sides being removable; a generally rectangular bottom secured about its periphery to the lower portion of said lower sides and ends, said sides, ends and bottom defining a box like lower portion of said cooker; double walled, opposed pairs of upper sides and ends secured together to form corners, each of said double walled upper sides and ends defining an insulating dead air space, the exterior wall of each of said upper sides being removable; a generally rectangular shaped top secured about its periphery to the upper portion of said upper sides and ends, said sides, ends, and top defining a box like upper portion of said cooker, hinge means pivotably connecting said upper and lower portions of said cooker; elongated electrical heating elements operatively disposed within said lower portion; thermostatic and timer control means operatively connected to said heating elements for selectively controlling the current flow to such elements whereby the temperature and time of cooking can be regulated; rack means; means for removably supporting said rack means within said lower portion of said cooker; drip shield means secured to each of said rack means in vertical alignment with each of said heating elements whereby juices from products being cooked are prevented from dripping onto said elements; a means for smoking a product being cooked within said cooking means including a housing for wood used to create smoke and an exteriorly controlled electrical heating element operatively mounted within said housing to cause said wood to smolder; and releasable support means operatively secured between said lower and said upper portions of said cooker whereby said upper portion can be releasably held in open position during loading and unloading.

4,126,088

APPARATUS FOR PRESSING LIQUIDS, SUCH AS OIL AND THE LIKE FROM LIQUID CONTAINING MATERIAL

Willem L. Thieme, Heemstede, and Johan F. Witte, Amsterdam-Nieuwendam, both of Netherlands, assignors to Stork Amsterdam B.V., Amstelveen, Netherlands

Filed Sep. 2, 1977, Ser. No. 830,146
Claims priority, application Netherlands, Feb. 9, 1976, 7609802
Int. Cl.[2] B30B 9/08, 9/20
U.S. Cl. 100—45 5 Claims



1. An apparatus for pressing liquids, for instance oil and the like, from liquid containing material, such as fruits and seeds, the apparatus comprising a pair of driven rollers with a rough surface the first main roller of which is partially surrounded by a pressure cage with a specific shape determined by the liquid contents of the material to be pressed, whilst the second roller is located opposite the main roller, a substantially horizontal shaker gutter being provided for conveying the material to be pressed from a supply hopper to the pair of rollers, the main roller of which being positioned beneath the second roller, which functions as a feed roller, means being arranged next to the end of the shaker gutter to determine the layer thickness of the supplied material, in response to the motor output consumed by the rollers.

4,126,089

DEVICE FOR COMPRESSING CROP INTO BALES

Pieter A. Oosterling, Nieuw-Vennep, and Adriaan Van Zweeden, Rijsenhout, both of Netherlands, assignors to Expert N.V., Willemstad, Netherlands Antilles

Filed Jun. 29, 1977, Ser. No. 811,178
Claims priority, application Netherlands, Jun. 30, 1976, 7607222
Int. Cl.[2] B30B 1/08, 9/30
U.S. Cl. 100—250 9 Claims

1. A device for compressing crop into bales, comprising in combination:

an elongate and horizontally extending compressing chamber having a discharge end portion within which a compressed bale is formed;

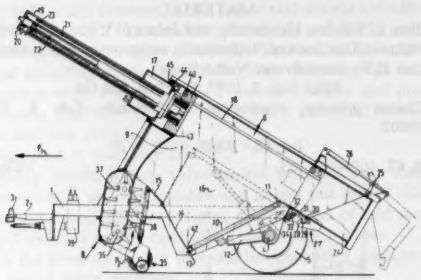
crop compressing means for compressing crop within said chamber into said discharge end portion;

means for feeding crop into said chamber to be compressed by said compressing means;

said discharge end portion being formed in part as a swingable end closure whereby a compressed bale may be discharged by virtue of its own weight, said end closure including a transverse end wall and a generally horizontal bottom wall;

pivot means pivotally connecting said end closure to said compressing chamber about a transverse pivot axis whereby said bottom wall is swingable from its generally

horizontal position to a downwardly inclined position; and



means for releasably latching said end closure in end closing position.

4,126,090

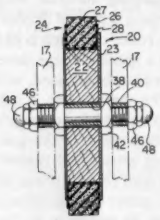
INKING RING AND WHEEL FOR CODE DATERS

James G. McKay, Skokie, Ill., assignor to Kiwi Coders Corporation, Wheeling, Ill.

Continuation of Ser. No. 669,645, Mar. 23, 1976, abandoned, which is a continuation of Ser. No. 477,654, Jun. 10, 1974, abandoned. This application May 25, 1977, Ser. No. 800,222

Int. Cl.[2] B41J *3/60*; B41F *31/26*

U.S. Cl. 101—348 **3 Claims**



1. An inking device for transferring ink to a printing member in a rolling contact engagement and which comprises:

A. a disc wheel adapted to be mounted on a shaft for rotation, the disc being rigid and having parallel flanges circumferentially arranged defining an annular peripheral channel on the disc wheel, the circumferential surface of said disc defining a hub,

B. a resilient expandible inking ring firmly engaged in said channel and confined thereby and having a substantial portion supported by the flanges but protruding beyond the same, said inking ring comprising:

i. an annular generally rectangular cross section member having parallel side walls and formed of cellular, resilient, flexible elastomeric material which is adapted to carry ink applied thereto in interstices and transfer same to a printing member which said cellular member may engage,

ii. a channel-shaped cross section, annular, thin-walled shell of vulcanized rubber sheet material having a density substantially greater than that of the cellular material whereby to render the shell ink impervious, the channel configuration opening outwardly to provide a second channel,

iii. a thin bonding layer disposed only between the shell and the cellular member,

iiii. the shell, bonding layer and cellular member being vulcanized so as to be permanently bonded together with the inner surfaces of said second channel bonded to the inner circumferential surface of the cellular member and to the end surfaces of said cellular member, the resulting composite ring being of such dimensions so as to be capable of being temporarily stretched radially for engagement over said hub then self constrictably returning to effect a firm yet slidable engagement with the circumferential surface of said hub whereby to nest in the first-mentioned channel,

C. the lateral walls of the shell having a radial dimension which is substantially less than the radial thickness of the cellular member but greater than the depth of the said first-mentioned peripheral channel so that the radially outer portions of said parallel side walls and the outer circumferential surface of the cellular member extend outward from said shell and said outwardly extending portions being free of said bonding layer whereby when assembled onto the disc wheel, the shell serves as a barrier to prevent transfer of ink from the cellular member to any part of the disc wheel while permitting the circumferential portion of the cellular member freely to function as ink transfer means, said ring being slidably removable as a unit from the hub.

4,126,091

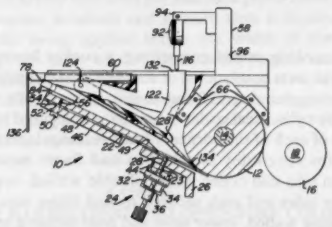
FOUNTAIN BLADE AND APPARATUS FOR CALIBRATING THE SAME

Abraham N. Cohen, 1522 Elbridge St., Philadelphia, Pa. 19149

Filed Dec. 21, 1976, Ser. No. 753,078

Int. Cl.[2] B41F *31/02*

U.S. Cl. 101—365 **8 Claims**



1. An apparatus for accurately measuring the relative gap between a fountain blade and a fountain roller at various locations along said fountain blade comprising:

a distance measuring instrument having a displaceable projection and a calibrated indicator for indicating the relative displacement of said projection;

means for supporting said measuring instrument;

said supporting means including a surface for resting on the surface of said roller, said surface being slideable along the longitudinal length of said roller;

an arm carried for pivotable motion by said support means;

a portion of said pivotable arm contacting said fountain blade and a second portion of said pivotable arm contacting said projection of said measuring instrument.

4,126,092

METHOD OF CUTTING METAL ELEMENTS UNDERWATER AND A SHAPED EXPLOSIVE CHARGE DEVICE THEREFOR

Graham W. Cross, Saltcoats, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 21, 1976, Ser. No. 752,920

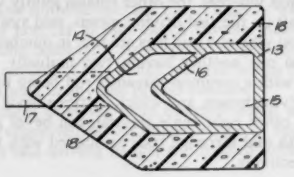
Claims priority, application United Kingdom, Jan. 27, 1976, 3068/76

Int. Cl.[2] F42B *3/08*

U.S. Cl. 102—24 HC **8 Claims**

1. A method of cutting a hollow metal cylindrical pipe underwater into two parts comprising placing an annular shaped explosive charge device on the surface of the pipe so as

externally to embrace the pipe, and reducing secondary damage to the cut edges of the pipe by means of a sufficient quan-



tity of foam disposed externally adjacent to the device out of the path of the focussed jet produced when the device is detonated.

4,126,093

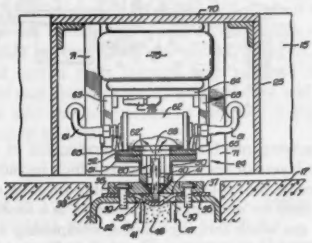
AIR SUPPLY TRACK FOR AIR BEARING TRANSPORTER AND THE LIKE

Robert E. Burdick, Santa Barbara, and Punamchand P. Prajapati, Goleta, both of Calif., assignors to Rolair Systems, Inc., Santa Barbara, Calif.

Continuation-in-part of Ser. No. 598,413, Jul. 23, 1975, abandoned. This application Aug. 20, 1976, Ser. No. 716,295

Int. Cl.[2] B60V *3/04*; B61B *13/12*

U.S. Cl. 104—159 **16 Claims**



1. In an air supply system, the combination of:

a track comprising an air conduit with a first wider slot therealong,

a membrane overlying said first slot, and

clamp means clamping said membrane onto said conduit and defining a second narrower slot, with air pressure in said conduit urging said membrane against said second slot in sealing relation,

said membrane having a plurality of openings therealong communicating with the interior of said conduit through said first slot, with said openings closed by said clamp means when said membrane is against said second slot, said clamp means including spaced guide surfaces defining a groove converging toward said membrane; and

a probe for positioning at said track and comprising

a shoe for engagement with said clamp means adjacent said second slot,

a membrane contact member carried in said shoe,

means defining an air flow passage from said contact member through said shoe to a load, and

means for moving said shoe towards said track engaging said contact member with said membrane, said contact member moving said membrane away from said second slot for air flow from said conduit through said first slot, membrane openings and second slot into said shoe, and for moving said shoe away from said track disengaging said contact member from said membrane and blocking air flow,

said shoe having converging side walls of uniform cross-section extending along said track in both directions from said contact member in sliding sealing engagement with said guide surfaces providing a matched interface between said track and probe, so that said clamp means guides said shoe both in movement along said track and toward said track and provides an air seal with said shoe,

with said shoe air flow passage centrally located in said shoe and with said shoe closed between said converging side walls in front and back of said flow passage and positioned at said membrane.

4,126,094

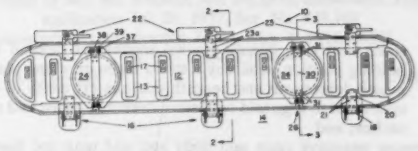
COMBINATION HATCH COVER HAVING SUPPLEMENTAL LOCKING ARRANGEMENT

James R. Zimmerle, O'Fallon; Robert W. Randolph, and Dallas W. Rollins, both of St. Charles, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Jun. 13, 1977, Ser. No. 805,719

Int. Cl.[2] B61D *39/00*

U.S. Cl. 105—377 **7 Claims**



1. A combination hatch cover for use in railway car roofs in which a large cover is hingedly mounted on the roof and wherein the large cover has latch means mounted on the roof for maintaining the large cover in closed position, and wherein a small cover is mounted on the large cover and wherein small cover hinge means mount the small cover on the large cover and wherein separate small cover latch means tend to maintain said small cover in the closed position, said small cover latch means including a latch on said small cover, and an overcenter locking handle pivotably mounted on the large cover, said handle engaging said latch in closed position, said locking handle tending to maintain said small cover in closed position; said large cover when moved to open position impacting said roof and applying an impact force to said small cover; said small cover latch means being mounted on the same side of the large cover as said large cover hinge means to reduce the tendency of said impact force to cause said small cover latch means to open; a supplemental locking assembly mounted on said large cover adjacent said small cover latch means; said supplemental locking assembly including a supplemental locking plate pivotably mounted as to be movable between an operative position overlying said overcenter locking handle to prevent said latch from disengaging when said large cover is opened and impacts against the car roof structure, and an inoperative position wherein said supplemental locking plate does not overlie said overcenter locking handle and in which inoperative position said overcenter locking handle may be moved from a closed, overcenter position to an open position, allowing disengagement of said latch with said handle to open said small cover.

4,126,095

TIE-DOWN FITTING

Thomas H. Tillery, 13371 Lee Dr., Westminster, Calif. 92683

Filed Nov. 7, 1977, Ser. No. 848,922

Int. Cl.[2] B62C *9/00*; F16G *11/00*

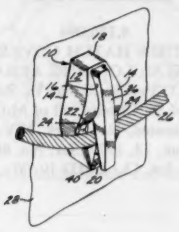
U.S. Cl. 105—475 **5 Claims**

1. A tie-down fitting comprising:

a body including an undersurface adapted for mounting to a supporting surface, said body further including a stop surface and a pair of side portions projecting above said undersurface and spaced apart to define an elongated

recess, said side portions including transversely aligned depressions;

an elongated tang pivotally mounted within said recess for movement between a recessed position, wherein one extremity of said tang is located between said depressions and the opposite extremity partially projects above said side portions, and a holding position, wherein said one extremity is spaced above said depressions and said opposite extremity is engaged upon said stop surface to con-



strain said tang against pivotal movement beyond said holding position, whereby a strain taken on a line placed in said depressions and beneath said one extremity of said tank tends to urge said opposite extremity against said stop surface; and

means operative upon said body and said tang and biasing said tang toward said recessed position whereby said one extremity of said tang is adapted to press upon said line and hold it in said depressions despite the absence of a strain on said line.

4,126,096

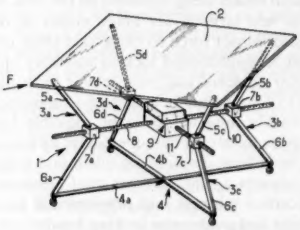
SYSTEM OF SUPPORT LEGS FOR A TABLE, A SEAT OR LIKE OBJECT RESTING UPON THE FLOOR BY MEANS OF A SET OF LEGS

Yvette J. D. Arnaud Malavard, 25, Ave. Ferdinand Buisson, 75016 Paris, France

Filed Nov. 23, 1976, Ser. No. 744,266

Int. Cl.[2] A47B *9/00*

U.S. Cl. 108—145 **2 Claims**



1. A system for supporting a surface such as a table top above the ground, through legs, said legs being hingedly assembled with respect to said surface and being connected to driving means causing said legs to rotate about their hinges, enabling vertical adjustment of the height of said support surface wherein: each leg comprises an upper and a lower arm respectively, said arms being hingedly connected to one another at adjacent ends, one end of said upper arm being hingedly connected to the said supported surface at an edge thereof, one end of the lower arm being hingedly connected to a frame resting upon the ground, and a common hinged joint of said arms of each leg being connected to the said driving means for causing, by its displacement, an angular opening of said arms with respect to one another, whereby said respective hinged joints move away from one another when said supported surface is rising, said commonhinged joint being defined by a nut screwed on a threaded rod, said threaded rod being connected to said driving means by a set of two right-angle transmission bevelpinions, one of whch rotates jointly with the threaded rod whereas, the other rotates jointly with a driving output shaft on the said driving means, said system being further defined whereby said legs are four in number disposed 90° apart from one another having two mutually opposite legs provided with a common threaded rod being driven directly by said driving means, and which carries a bevel gear meshing with two other right-angle transmission bevel gears rotating jointly with said threaded rods associated with the two other legs, respectively.

4,126,097

SEWING MACHINE HAVING A GUIDING DEVICE FOR THE PRODUCTION OF EDGE-PARALLEL SEAMS

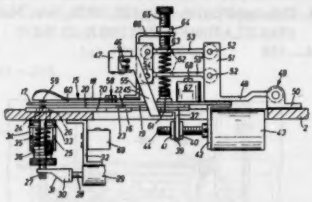
Erich Willenbacher, Rheinstetten, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Jun. 1, 1977, Ser. No. 802,314

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627520

Int. Cl.[2] D05B *35/10*

U.S. Cl. 112—153 **7 Claims**



1. A sewing machine for the production of edgeparallel seams on layers of sewing materials which includes a reciprocating needle movable through a stitch-forming station and a material feed for advancing the material in a feeding direction through the stitch-forming station, comprising a plurality of plates arranged in spaced vertical relationships one above the other and defining at least two separate material feed paths, each path being defined between two adjacent plates, first and second end guides disposed between respective plates in respective material feed paths defining end guides for the respective materials along a line extending laterally in a feeding direction through the needle axis, means defining a pressure point for engagement with each layer laterally and in front of the stitch-forming station, a guiding device carrying one of said first and second end guides, and means mounting said one end guide in said guiding device for adjustment transverse to the feeding direction, said guiding device including a movable slide, drive means for moving said slide, and sensor means for sensing the spacing between the edges on one side of the layers of material.

4,126,098

BUTTONHOLE CAM UNIT WITH BALL BEARING CLUTCH

Lionel J. Coulombe, Matawan, N.J., assignor to The Singer Company, New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,429

Int. Cl.[2] D05B *3/06;* F16D *11/04*

U.S. Cl. 112—158 B **6 Claims**

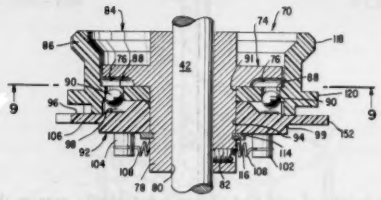
1. A clutch for selectively coupling a buttonholing cam element to a rotating drive shaft comprising:

a clutch driving member secured to said drive shaft and including a driving flange formed with a plurality of radial notches in one surface thereof;

a clutch element of which only a portion may be accommodated in any one of said flange notches;

a clutch element carrier plate rotatable with said buttonholing cam element, said carrier plate being supported adjacent to said clutch driving flange and formed with a through hole shiftable into and out of registry with one of said radial notches in said clutch driving member, said through hole being of a size capable of accommodating only that portion of said clutch element which cannot be accommodated in any one of said notches;

a clutch element engaging plate rotatable about said drive shaft and supported at the opposite side of said carrier plate from said driving flange, and formed with a recess



accommodating another portion of said clutch element equivalent to that one portion which may be accommodated in any of said driving flange notches; and

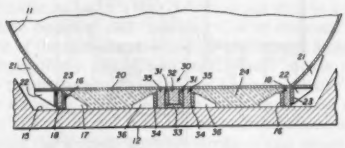
means for shifting said clutch engaging plate recess selectively into registry with said carrier plate through hole to accommodate movement of said clutch element to withdraw said one portion out of said driving flange notch as said another portion enters said recess or out of registry with said carrier plate through hole to force said one portion of said clutch element into a notch of said driving flange as said another portion of said clutch element is forced out of said recess.

4,126,099

SHIP WITH FLAT BOTTOM TANK AND SHRINK-FIT SYSTEM FOR LATERAL SUPPORT

Kenneth W. Lange, Burr Ridge, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Jun. 27, 1977, Ser. No. 810,363
Int. Cl.[2] B63B *25/16*
U.S. Cl. 114—74 A **14 Claims**



1. In combination:

a ship having a hold with a bottom;

a tank which expands and contracts in service in the hold for transporting a liquefied gas;

the tank comprising a metal shell having a substantially flat metal bottom portion supported by load bearing insulation on the ship hold bottom;

the tank having a horizontal collar comprising wall portions;

the hold having a stationary horizontally positioned block describing a periphery smaller than the collar;

at least one of the collar and the block being insulated;

said collar being spaced outwardly from the stationary block periphery at ambient temperature and when the tank is at a service lower temperature carrying a liquefied gas said collar contracting with the tank into tight contact with the block; and

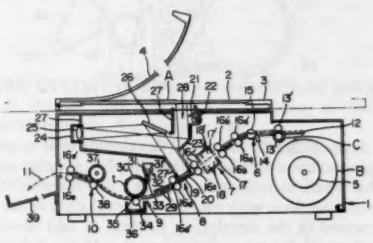
restraining means which prevents horizontal or lateral movement of the tank when empty and at ambient temperature when the ship rolls and pitches.

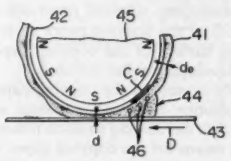
4,126,100

APPARATUS FOR CAUSING A DEVELOPER POWDER TO MAKE AN IRREGULAR MOTION IN A DEVELOPING ZONE

Hitoshi Nishihama, Hirakata; Katsuhiko Gotoda, Osaka; Minoru Motomura, Nara; Takanobu Nakajima, Kashihara, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company Ltd., Osaka, Japan

Division of Ser. No. 599,953, Jul. 29, 1975, abandoned. This application Jul. 26, 1977, Ser. No. 819,163
Claims priority, application Japan, Aug. 1, 1974, 88381
Int. Cl.[2] G03G *15/09*
U.S. Cl. 118—658 **31 Claims**



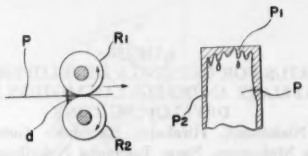


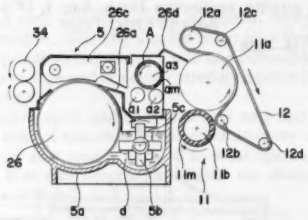
1. An apparatus for developing an electrostatic latent image formed on the surface of an image-bearing material by applying a powdery developer thereto, said apparatus comprising a developer-retaining member capable of retaining a layer of the powdery developer on its surface, the surface being movable at a predetermined speed, means for feeding the solid powdery developer to the surface of said developer-retaining member at a predetermined position so that the developer-retaining member can have a layer of the developer on its surface, means for bringing the surface of the developer-retaining member into rolling contact with the surface of the image-bearing material through the layer of the developer at a predetermined position downstream of said first-mentioned predetermined position in the moving direction of the surface of said developer-retaining member, said contacting means bringing the two surfaces into rolling contact with each other in such a relation that a reservoir zone of the developer is formed upstream of and adjacent to the rolling contact zone of the two surfaces, and means for physically disturbing the developer in said reservoir zone to cause the developer to make an irregular motion.

4,126,101
EXCESS DEVELOPING SOLUTION REMOVING APPARATUS

Shunji Yamamoto, Shinshiro, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 6, 1977, Ser. No. 813,184
Claims priority, application Japan, Jul. 9, 1976, 51-92219[U]; Jul. 29, 1976, 51-101790[U]
Int. Cl.[2] G03G *15/10*
U.S. Cl. 118—661 **18 Claims**





1. A developing unit of the wet developing type employing developing solution for use in an electrophotographic copying apparatus which includes a developing roller member rotating in a developing tank, with part of said developing roller member immersed in the developing solution in said developing tank, and means for removing excess developing solution adhering to the surface of copying paper developed while passing said developing roller member, said excess developing solution removing means comprising,

at least two developing solution removing members disposed in a path of the copying paper so as to contact an image bearing surface of the copying paper after it has passed said developing roller member,

means for lightly depressing the copying paper toward said developing solution removing members and positioned between said two developing solution removing members,

said depressing means for the copying paper not contacting said developing solution removing members, with the copying paper being transported between said developing solution removing members and said copying paper depressing means in an approximately M-shaped path, said developing solution removing members being disposed in a direction at right angles to the transporting direction of the copying paper and having a linear portion with a length sufficient to contact the entire surface of the copying paper and being so constructed as to prevent the developing solution removed by contact of said developing solution removing members with the copying paper after the developing from spreading onto the reverse surface of the copying paper.

4,126,102
AQUARIUM AND METHOD OF MAKING SAME

James V. Galloway, 190 Sheridan Rd., Winnetka, Ill. 60093

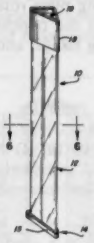
Filed Oct. 14, 1976, Ser. No. 732,547
Int. Cl.[2] A01K *64/00*
U.S. Cl. 119—5 **6 Claims**

1. An aquarium comprising:

an upright three sided body formed of a substantially rectangular single sheet of transparent material and having top and bottom open ends;

each side having a substantially uniform thickness and said sides together forming three included angles;

at least two of said included angles being less than 90° and having a radius of curvature at substantially greater than the thickness of said sides;



the height of said body being substantially greater than the width of the widest side;

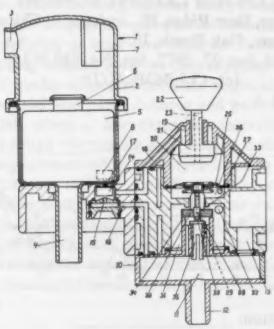
seaming means for securing together only the two opposite edges of said single sheet defining said body; and,

a base member subtending said body and being connected to said bottom open end and forming therewith a watertight seal.

4,126,103
CONTROL APPARATUS FOR AUTOMATIC REMOVAL OF MILKING MEANS

Karl E. Olander, Sodertalje, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Jun. 6, 1977, Ser. No. 804,073
Claims priority, application Sweden, Jun. 10, 1976, 7606543
Int. Cl.[2] A01J *5/04, 7/00*
U.S. Cl. 119—14.08 **6 Claims**



1. Apparatus for controlling operation of a milking means remover to effect automatic removal of the milking means after a milking operation, said apparatus comprising a vacuum source, means forming a flow connection through which the vacuum source is adapted to be connected pneumatically to said remover, said flow connection including a primary valve having an open position for effecting operation of said remover and having a closed position for preventing operation of the remover, a pneumatic actuator operatively connected to the primary valve for actuating the same, a sensor for sensing the rate of milk flow from the milking means, a secondary valve under control of the sensor for actuating the pneumatic actuator, the secondary valve having a first position for causing said actuator to maintain the primary valve closed in response to said sensing of a normal milk flow rate and having a second

position for causing the actuator to open the primary valve in response to said sensing of a substantial decrease from said normal milk flow rate, and means associated with the actuator and operable upon said opening of the primary valve to maintain the primary valve open regardless of the position of the secondary valve.

4,126,104

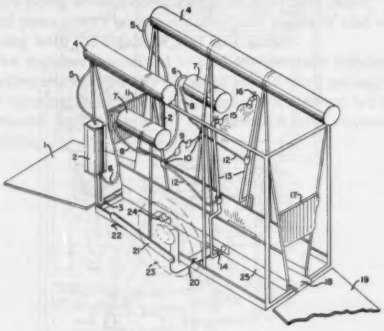
PORTABLE ANIMAL SPRAYER

Vernon V. Overby, P.O. Box 428, Edwards, Miss. 39066

Filed Jul. 8, 1976, Ser. No. 704,041

Int. Cl.[2] A01K *29/00*

U.S. Cl. 119—159 **9 Claims**



1. Apparatus for spraying an animal with a fluid comprising:

a frame including means defining a passageway for passge of an animal therethrough;

means mounted on said frame for spraying fluid on the animal in said passageway, said spraying means including a reservoir containing a fluid to be sprayed, pump means having an inlet connected to said reservoir and an outlet and at least one spray nozzle connected to said outlet, said pump means having a first operative stroke for forcing fluid under pressure to said spray nozzle and a second operative stroke for withdrawing fluid from said reservoir;

treadle means arranged in said passageway and defining a walkway for the animal;

means pivotally mounting said treadle means about an axis intermediate the length of said treadle means for pivoting said treadle means in a first direction and then in a second direction opposite said first direction in response to the weight of the animal as it traverses said treadle means; and

means operatively connecting said treadle means to said pump means for actuating the first operative stroke of said pump means in response to the pivoting of said treadle means in one of said first and second directions and for actuating the second operative stroke of said pump means in response to the pivoting of said treadle means in the other of said first and second directions.

4,126,105

BOILER WITH HORIZONTAL BOILER SECTIONS

Kurt Böttcher, Konrad Adenauer Strasse 1, Nieder-Ramstadt, Germany (D 6101), and Peter Metz, Drei Linden Strasse 17, Neuenhain, Germany (D 62 32)

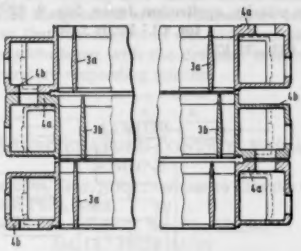
Filed May 25, 1977, Ser. No. 800,392

Claims priority, application Fed. Rep. of Germany, May 26, 1976, 2623632

Int. Cl.[2] F22B *15/00*

U.S. Cl. 122—214 **5 Claims**

1. Boiler with horizontal boiler sections consisting of a plurality of horizontal heat exchanger elements for transfer of heat from a heating medium to a heat carrier medium, wherein at least some of the elements consist of a plurality of pipes carrying the heat carrier medium and are provided with exterior fins, the boiler section consisting of a compact frame in which the pipes conducting the heat carrier medium are secured and



which is in heat conductive connection with the adjacent pipe by means of the fins provided on the pipes, the frame preferably being connected with the pipe by an integral material to material contact.

4,126,106

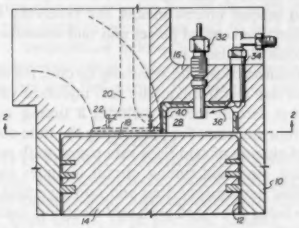
MIXED CYCLE INTERNAL COMBUSTION ENGINE

Julius E. Witzky, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Sep. 6, 1977, Ser. No. 830,504

Int. Cl.[2] F02B *17/00*

U.S. Cl. 123—30 D **6 Claims**



1. An internal combustion engine operating on a mixed Otto and diesel cycle comprising,

a cylinder,

a reciprocating piston therein,

a cylinder head on said cylinder,

a first combustion chamber formed in the head,

a second combustion chamber formed by the opposed surfaces of said piston and cylinder below said head,

an air intake passageway opening into said cylinder,

means for causing the air passing through said passageway to swirl in said first combustion chamber,

ignition means positioned in the first combustion chamber,

fuel injection means in said first chamber directing fuel against the direction of swirling air in said first chamber for forming a stratified fuel charge adjacent the ignition means for ignition during starting and low loads, said injection means directed to impinge the fuel on the wall of the first chamber whereby on high loads the increased mass of fuel will impinge on the hot wall of the first chamber and will evaporate and will ignite by compression, and

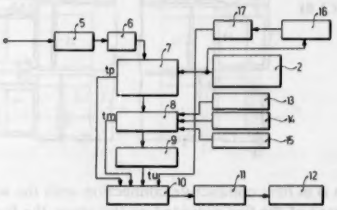
said engine having a compression ratio of less than 16:1.

4,126,107

ELECTRONIC FUEL INJECTION SYSTEM

Susumu Harada, Oobu, and Kunio Endo, Anzyo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 3, 1976, Ser. No. 720,385
Claims priority, application Japan, Sep. 8, 1975, 50/109177
Int. Cl.[2] F02B *3/00*
U.S. Cl. 123—32 EH **6 Claims**



1. In a fuel injection system for an internal combustion engine, said engine including a crankshaft, an induction tube and at least one electromagnetic fuel injection valve and said fuel injection system including means for generating signals related to engine parameters and means to receive said signals and to generate therefrom primary fuel injection control pulses in synchronism with the rotation of said crankshaft and means for measuring the air flow rate through said induction tube and to generate an electrical datum related thereto, the improvement comprising.

first circuit means, for receiving said datum related to air flow rate and for generating therefrom a trigger signal when the rate of change of said air flow rate exceeds a predetermined value;

second circuit means, for receiving said trigger signal and for generating secondary fuel injection control pulses;

a summing circuit connected directly to said means generating the primary fuel injection control pulses and directly to said second circuit means, for receiving said primary fuel injection control pulses and said secondary fuel injection control pulses; and

means, connected to said summing circuit, for actuating said at least one electromagnetic fuel injection valve, wherein said first circuit means includes a timing circuit with a fixed time constant for comparing the time constant of the rate of change of said flow rate signal with said fixed time constant, and said timing circuit includes an operational amplifier having inverting and non-inverting inputs, both inputs being provided with said electrical datum related to the air flow rate through the induction tube, one of said inputs being connected to a resistor and a capacitor to provide time delay action for changes in the input signal; whereby said operational amplifier acts in a manner of a comparator and changes its logical output whenever the rate of change of said input signal is such as to reverse the relative magnitude of the potentials present at said inverting and non-inverting inputs.

4,126,108

APPARATUS FOR DRAINING A COOLING SYSTEM

Fredrich M. Christensen, 10256 Prarie Rd., Omaha, Nebr. 68134

Continuation-in-part of Ser. No. 764,708, Feb. 1, 1977, abandoned. This application Aug. 19, 1977, Ser. No. 826,145
Int. Cl.[2] F01P *11/20*
U.S. Cl. 123—41.14 **27 Claims**

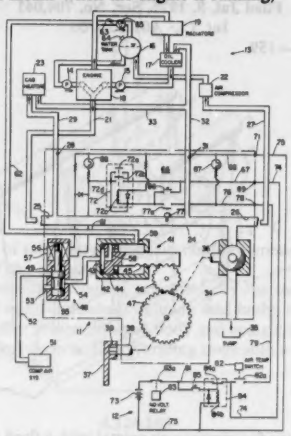
1. Apparatus for draining coolant from the liquid cooling system of a locomotive engine comprising

a. a drain passage connected with the cooling system and containing a rotary, plug type drain valve movable between open and closed positions;

b. motor means effective when energized to move the drain valve to open position but being ineffective to close that valve;

c. automatic control means, including a temperature sensor, for energizing the motor means when the temperature sensed by the sensor reaches a predetermined low value;

d. arming means responsive to the operating state of the engine for enabling the automatic control means to energize the motor means in response to the occurrence of said predetermined low temperature when the engine is not running and for preventing such action of the automatic control means when the engine is running;



e. manually triggered reset means for overriding the automatic control means so as to deenergize the motor means, the reset means including timing means which terminates said override action at the end of a predetermined limited time period following manual triggering of the reset means; and

f. manually operable actuating means for moving the drain valve between said positions, but being effective to close that valve only when the motor means is deenergized.

4,126,109

TEMPERATURE RESPONSIVE DEVICE FOR INTERNAL COMBUSTION ENGINE

Hajime Akado; Akihide Yamaguchi, both of Kariya, and Yoshiro Uchida, Toyota, all of Japan, assignors to Nippon Denso Co., Ltd., Kariya, Japan

Filed Nov. 5, 1976, Ser. No. 739,190
Claims priority, application Japan, Nov. 19, 1975, 50-157943
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—122 D **9 Claims**

1. A temperature responsive device for an internal combustion engine comprising:

an air cleaner connected to an intake manifold of an internal combustion engine for supplying air thereto through a filter element mounted in said air cleaner, said air cleaner having a throat opening to the atmosphere for introducing air from the atmosphere into said air cleaner, said throat having an aperture;

a switching valve pivotally mounted in said throat adjacent to said aperture for closing and opening the same;

a negative pressure motor mounted on said throat and having a negative pressure chamber and a movable diaphragm responding the negative pressure applied to said negative pressure chamber, said diaphragm being connected to said switching valve so that said switching valve is actuated to close and open said aperture in response to the movement of said diaphragm;

a conduit connected to said aperture at one end and opening to a portion of an exhaust manifold of said engine so as to

introduce warmed air around said exhaust manifold into said air cleaner when said aperture is opened; and

a thermostatic valve mounted in said air cleaner having an inlet connected to said intake manifold and an outlet connected to said negative pressure chamber,

wherein said thermostatic valve comprises:

a temperature responding portion exposed inside of said air cleaner for detecting the temperature in said air cleaner;

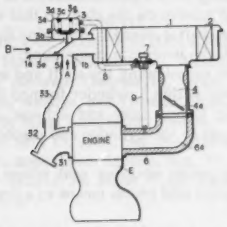
a valve casing coupled to said temperature responding portion and having said inlet and outlet;

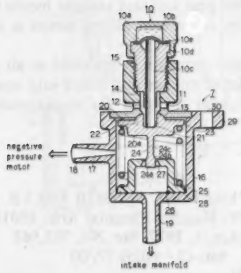
a first passageway communicating said inlet with the inside of said valve casing;

a second passageway communicating said outlet with said inside of said valve casing, said first and second passageways being always communicated with each other;

a third passageway communicating said inside of said valve casing with the inside of said air cleaner;

a valve member connected to said temperature responding portion and operatively disposed in said third passageway for opening and closing the same in accordance with the detected temperature at said temperature responding portion,





said valve member closing said third passageway when the detected temperature is lower than a predetermined value, so that no additional air is supplied to said intake manifold and that the negative pressure from said intake manifold is applied to said negative pressure chamber of said negative pressure motor through said inlet, said first passageway, said inside of said valve casing, said second passageway and said outlet, whereby said switching valve is actuated to open said aperture so as to introduce the warmed air to said air cleaner;

said valve member opening said third passageway when the detected temperature is higher than said predetermined value, so that said negative pressure chamber is communicated to the atmosphere through said second and third passageways and that said negative pressure from said intake manifold is no longer applied to said negative pressure chamber of said negative pressure motor, resulting in the closure of said aperture by said switching valve,

the opening of said third passageway by said valve member enabling air from said air cleaner to flow through said third passageway, said inside of said valve casing, and said first passageway, the air being fed to said intake manifold as additional air for said engine; and

a rod coupled to said valve member and operatively disposed in said first passageway for varying although not closing off the opening area thereof in accordance with the detected temperature at said temperature responding portion, so that the amount of the additional air is controlled in accordance with the detected temperature at said temperature responding portion.

4,126,110

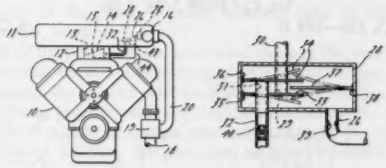
INLET AIR TEMPERATURE CONTROL FOR AN I.C. ENGINE

Richard T. Simmons, Troy, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jun. 13, 1977, Ser. No. 805,945

Int. Cl.[2] F02M *31/00*

U.S. Cl. 123—122 D **13 Claims**



1. In an assembly responsive to temperature for controlling the application of pressure from two separate pressure sources to a pressure actuated motor, the combination comprising a housing having a hollow interior and two ports communicating with said interior for connecting the latter with the separate pressure sources respectively and having a third port communicating with said interior for connecting the latter with a motor, and means for selectively connecting said interior with one or the other of the first named two ports comprising temperature responsive valve means normally closing said first named two ports to each other and to said interior and responsive to temperature below or above a predetermined operating temperature range respectively for opening only one or only the other said first named two ports to said interior.

4,126,111

OTTO INTERNAL COMBUSTION ENGINE

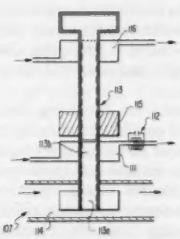
Günther Häfner, and Victor Pfeffer, both of Stuttgart, Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Oct. 7, 1976, Ser. No. 730,441

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1975, 2544996

Int. Cl.[2] F02M *31/00*

U.S. Cl. 123—122 E **20 Claims**



1. An Otto internal combustion engine with high-pressure metering means and evaporation of the heated fuel by way of at least one expansion nozzle means, characterized in that the fuel during the operating phase of the engine is heated by a first means using exhaust gas heat at most to a base temperature

lying below its desired temperature and is electrically heated from the base temperature to the desired temperature by a second means,

the first means includes heat pipe means having a heat carrier for transferring the exhaust gas heat to the fuel, said heat carrier having a boiling temperature essentially corresponding to the base temperature,

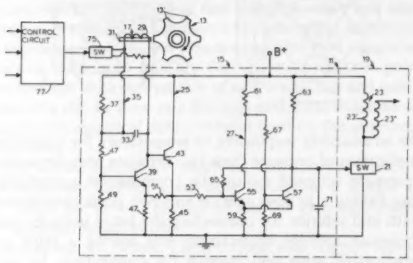
and in that a latent heat storage means is coordinated to the heat pipe means in its condenser portion for absorbing excess heat from the exhaust gas so that the fuel is not overheated, and for emitting excess heat to the fuel when insufficient heat is available from the exhaust gas, so that the fuel is heated to the desired temperature.

4,126,112

BREAKERLESS ELECTRONIC IGNITION SYSTEM

Andrew T. Tershak, Evansville, Ind., assignor to Eltra Corporation, Toledo, Ohio

Filed Feb. 27, 1976, Ser. No. 662,178
Int. Cl.[2] F02P *5/04, 1/00*
U.S. Cl. 123—148 E **5 Claims**



1. An ignition system, comprising:

ignition means operable in response to a timing signal for supplying an ignition pulse to an engine,

an electrically conductive trigger wheel rotatable in synchronization with the operation of the engine and having a plurality of teeth formed on its periphery,

feedback oscillator having an inductive coil located adjacent said trigger rotor and connected in parallel with a capacitor to form a LC tank circuit determining the operation of the oscillator in producing an oscillatory output signal, said oscillator requiring a minimum energy level in said LC tank circuit to sustain the oscillatory signal, and said LC tank circuit coupling the input and output of said oscillator,

said trigger wheel being inductively coupled to said oscillator through said coil upon movement of at least one of said teeth into proximity with said coil whereupon a current is established in said wheel by said oscillations, absorbing energy from the oscillator circuit and lowering the energy level of said oscillator below said minimum level for sustained oscillations at a particular distal relationship between said tooth and said coil to stop said oscillatory output signal,

demodulator means for receiving the oscillatory output signal from said oscillator and being operable in response to the absence of the oscillatory signal for producing a timing signal to actuate said ignition means,

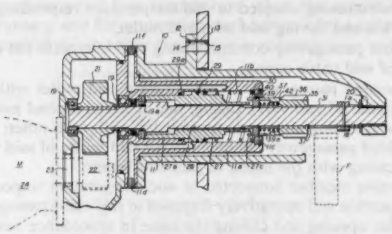
ignition timing control means operable in response to a predetermined engine operating condition for selectively applying an energy dissipating element in circuit with said LC tank circuit between said oscillator input and output to control the energy level of said oscillations so that said oscillatory output is stopped at a different distal relationship between said tooth and said coil dependent upon the magnitude of said element so as to change the timing of the ignition pulses.

4,126,113

ENGINE AIR STARTER

Manuel B. Sarro, 835 E. Lake, Houston, Tex. 77034, and Richard D. Kriefeldt, 13814 Barryknoll, Houston, Tex. 77079

Filed Oct. 17, 1977, Ser. No. 842,603
Int. Cl.[2] F02N *7/08, 15/06*
U.S. Cl. 123—179 F **5 Claims**



1. In an air starter wherein a rotatable shaft extends longitudinally of a housing with a gear connected in a longitudinally extending helical groove on the shaft so that when the gear is moved along the shaft it engages an engine flywheel for rotation by the shaft, the invention comprising:

a. piston means surrounding the shaft and sealably and slidably engaging within a cylinder formed in the housing;

b. the housing having inlet and exhaust air passages for conducting air to the cylinder and discharging air therefrom;

c. first spring means abutting said piston means and the housing to urge said piston means to a first position in the housing;

d. annular means in the helical groove rotatably connected with the gear and movable longitudinally on the shaft by said piston means to abut the gear;

e. second spring means between said annular means and the gear to retain the gear and said annular means in nonabutting relationship when said piston means is in said first position; and

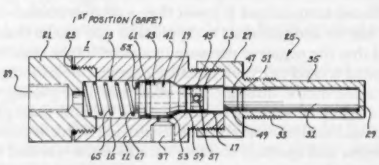
f. said piston means movable in response to air pressure in the housing inlet to engage and rotate said annular means to assist in aligning the gear for engagement with the flywheel.

4,126,114

TEMPERATURE SENSOR VALVE

Bill G. Davis, 516 W. Rancho, Phoenix, Ariz. 85013

Filed Apr. 1, 1977, Ser. No. 783,563
Int. Cl.[2] F02B *77/00*
U.S. Cl. 123—198 D **16 Claims**



1. In a liquid cooled engine or engine-driven accessory having engine protection means for reducing the engine RPM to a safe level in response to a fluid pressure below an acceptable level, a temperature sensor valve for continuously sensing the operating temperature of the engine or engine-driven accessory and the presence or absence of liquid coolant, and for reducing the fluid pressure below the acceptable level in response to an over-temperature condition or in response to an over-temperature condition or in response to at least a partial loss of the liquid coolant, said temperature sensor valve comprising in combination:

(a) temperature sensor means coupled to the housing of said apparatus and protruding into a coolant filled chamber of the apparatus for receiving heat from the housing and for transferring heat into the coolant, said temperature sensor means including

(i) heat rceiving means in mechanical contact with the housing for receiving heat from the housing;

(ii) heat dissipating means extending into the collant filled chamber for transferring the heat received by said heat receiving means into the coolant;

(iii) means defining a receptacle within said temperature sensor means;

(iv) a temperature responsive material disposed within said receptacle for expanding and contracting in response to the temperature of said temperature sensor means; and

(b) means in mechanical contact with said temperature responsive material for reducing said fluid pressure below said acceptable level to thereby reduce the RPM of said heat generating apparatus when said temperature responsive material expands beyond a predetermined volume.

4,126,115

INTERNAL COMBUSTION ENGINE

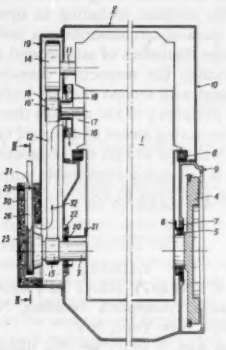
Hans List, 126, Heinrichstrasse, Graz, Austria; Josef Greier, Graz, Austria; Bertram Obermayer, Graz, Austria; Heinz Fachbach, Graz, Austria, and Othmar Skatsche, Graz, Austria, assignors to Hans List, Graz, Austria

Filed Sep. 19, 1977, Ser. No. 834,657

Claims priority, application Austria, Sep. 17, 1976, 6945/76

Int. Cl.[2] F02F *1/34;* **F02B** *77/00;* **F01P** *1/02*

U.S. Cl. 123—198 E **3 Claims**



1. An internal combustion engine with auxiliary machines driven by a V-belt and pulley from the engine, the engine and the pulley being enclosed by a sound suppressing encapsulation, the auxiliary machines being mounted externally of the encapsulation, the V-belt extending at least partly through a sound absorbing funnelshaped leadthrough to the pulley, the funnel-shaped leadthrough providing a silencer unit and a passageway for the intake of cooling air into the encapsulation.

4,126,116

PORTABLE BARBECUE DEVICE

David F. McCallum, 10160-121 St., Edmonton, Alberta, Canada

Filed May 2, 1977, Ser. No. 793,032

Int. Cl.[2] F24C *1/16*

U.S. Cl. 126—9 R **4 Claims**

1. A portable barbecue device, comprising

a frame,

means of securing the frame to a ground, and

a grill positionable to the frame, wherein

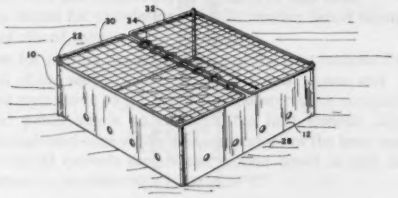
the frame comprises a set of four panels, and means of connecting the four panels together, wherein

each of the panels has a plurality of perforations in a lower portion of each of the panels, and wherein

the means of connecting the panels comprises:

a mating hinge member attached to each side of each of the panels, and

a post engageable with adjacent hinges where the sides of



each of the panels contacts adjacent sides of adjacent panels, wherein

each of the posts extends downward through the panels and extends beyond a bottom edge of each of the panels to engage the ground, with each of the posts formed with an annular groove just below the bottom of the panels, and in which a locking washer releaseably engages the annular groove, whereby the posts may be kept in position connecting the panels.

4,126,117

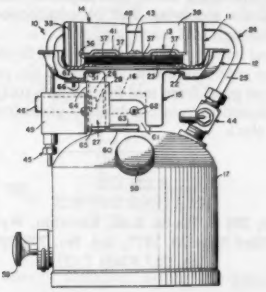
PORTABLE SINGLE BURNER CAMPSTOVE

Thomas C. Hastings, Willowdale, Canada, assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Apr. 11, 1977, Ser. No. 786,292

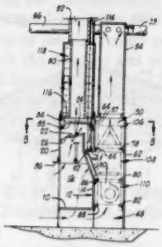
Int. Cl.[2] F23D *13/04*

U.S. Cl. 126—44 **6 Claims**



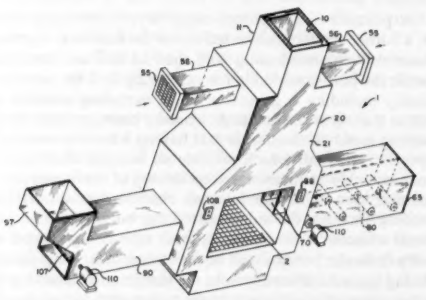
1. A portable single burner campstove comprising a fuel tank, a burner assembly mounted above the fuel tank, a generator assembly communicating with the fuel tank and extending adjacent the burner assembly for vaporizing fuel, the generator assembly including a generator tip, a mounting member secured to the top of the fuel tank, a burner box supported by the mounting member, the burner box having a bottom wall and a perimetric side wall which provide an internal chamber, the burner assembly being mounted on the top of the burner box in communication with the internal chamber, a venturi tube extending through the side wall of the burner box into the internal chamber therein, the venturi tube being spaced upwardly from the bottom wall of the burner box, the generator tip being spaced outwardly from the venturi tube whereby fuel flowing through the generator tip mixes with air as the fuel enters the venturi tube, the air and fuel being mixed in said internal chamber and being distributed by the internal chamber to the burner assembly.

4,126,118
MODULAR FIREPLACE ASSEMBLY
Freddie J. Haynes, 209 SW. 6th, Oklahoma City, Okla. 73125
Filed Mar. 28, 1977, Ser. No. 781,719
Int. Cl.[2] F24B 7/04
U.S. Cl. 126—121 10 Claims



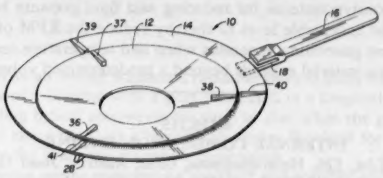
1. A modular fireplace assembly comprising:
a hearth;
a firebox around and over the hearth and open at one side at the forward side of the hearth;
an air plenum chamber on opposite sides of, and to the rear of, the firebox in heat transfer relation thereto;
a blower subassembly positioned in said air plenum chamber at a location to the rear of the firebox;
duct means connected to said air plenum chamber for conveying air between the plenum chamber and a plurality of rooms;
an air conditioning coil subassembly positioned between said blower subassembly and said duct means at a location within said air plenum chamber and to the rear of said firebox;
a stack connected to the upper side of the firebox and extending upwarding therefrom for receiving and venting combustion gases from the firebox;
a vertically extending water tank adjacent and surrounding said stack for receiving heat by conduction from gases passing through said stack; and
a ring-shaped burner positioned over said firebox and under said water tank and positioned around the path of flow of combustion gases from said firebox upwardly in said stack and positioned to vent combustion gases from the burner into said stack.

4,126,119
HEATING DEVICE
Claud D. Fike, 201 S. 7th St. East, Riverton, Wyo. 82501
Filed May 23, 1977, Ser. No. 799,395
Int. Cl.[2] F24B 7/00
U.S. Cl. 126—124 8 Claims



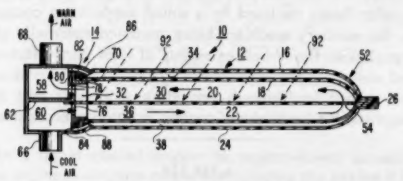
1. A heating device comprising a combustion chamber having an opening in one side thereof; an elongated enclosure communicating at one end with said opening and a plurality of feed means each comprising feed rollers with axes extending transversely of said enclosure, spaced lengthwise of said enclosure from one another, at least two sets of said rollers arranged transversely of the enclosure being provided to operate independently of one another whereby logs supported by said rollers can be moved, parallel to and independently of one another, into said combustion chamber by said rollers.

4,126,120
HEAT DISTRIBUTION DEVICE
Cedric D. Bourboulis, 112 Fountainhead Ct., Martinez, Calif. 94533
Filed Aug. 19, 1977, Ser. No. 826,011
Int. Cl.[2] F24C 15/10
U.S. Cl. 126—215 13 Claims



1. Apparatus for distributing heat from a heat source relatively evenly over the bottom of a vessel to be heated, said apparatus comprising:
a first annular element including an upwardly concave dish-shaped annulus circumscribing a hollow center, said first element including means on the underside thereof for defining releasable connecting means of a first type; and
a second annular element including an upwardly concave dish-shaped annulus circumscribing a hollow center, the inner and outer diameters of said second annular element being larger than the respective diameters of the first annular element, said second element including the means on the inner periphery of the annulus thereof for defining releasable connecting means of a second type complementary to said first type so that the connecting means of the second type is releasably engageable with the connecting means of the first type to lock the annular elements together.

4,126,121
SOLAR ENERGY HEAT APPARATUS
David W. Fairbanks, Monmouth Junction, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Aug. 5, 1977, Ser. No. 822,202
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—270 9 Claims



1. A solar energy heat transfer apparatus comprising:
first and second thermally insulated fluid chambers formed of pliable sheet material, said chambers having a common wall, said common wall having a solar energy absorbent surface, said chambers having a first deflated, relaxed condition in the absence of pressurized fluid therein and a second inflated condition in the presence of pressurized fluid therein,

said common wall having an opening for providing fluid communication between said chambers,

one of said chambers having a fluid inlet port for receiving pressurized fluid to be heated,

the other of said chambers having a fluid discharge port,

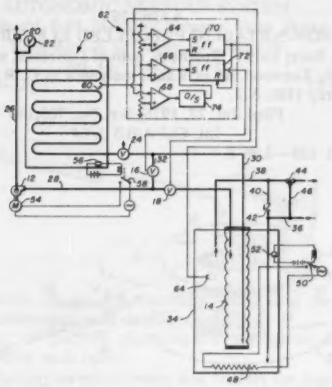
said ports and said opening being spaced such that said fluid passes over said common wall in said first and second chambers in flowing from said inlet to said discharge ports, one of said chambers having a light transparent outer wall.

4,126,122

SOLAR HOT WATER BOOSTER AND EXCHANGER FOR USE THEREIN

Theodore D. Bross, 62 High Ridge Rd., West Hartford, Conn. 06117

Filed Jan. 24, 1977, Ser. No. 761,964
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **7 Claims**



1. A preheater for raising the enthalpy of a liquid comprising:

solar energy collector means, said collector means defining a flow path for a heat transfer liquid, thermal energy being transferred to said heat transfer liquid during circulation thereof through said collector means;

tank means, said tank means being adapted to have discharged thereinto adjacent a first end a second liquid which is to be heated, said tank means being provided with an outlet for said second liquid adjacent a second end thereof disposed oppositely of said tank means first end, said tank means further having an entrance aperture in the second end thereof;

rim means, said rim means being adapted to be affixed to the wall of said tank means about the periphery of said entrance aperture;

a disc, said disc having a shape commensurate with and a cross sectional area in excess of the tank means entrance aperture;

a metal tube supported at a first end from said disc, said metal tube having contoured inner and outer wall surfaces which define a spiral configuration to promote a swirling flow along said wall surfaces to maximize the transfer of heat from a fluid within said tube to a fluid in contact with the exterior of said tube;

an end cap affixed to and closing the second end of said tube;

means removably securing said disc to said rim means whereby said tube extends into said tank means;

a feed conduit, said feed conduit extending into said tube through said disc and terminating adjacent to the first end of said tube whereby fluid may be discharged into said tube at the first end thereof;

a fluid withdrawal conduit, said withdrawal conduit extending into said tube through said disc and terminating adjacent said end cap whereby fluid may be withdrawn from said tube at the second end thereof;

means connecting the interior of said tube in a closed heat transfer liquid circulation loop with said solar energy collector means, said connecting means being coupled to said feed and withdrawal conduits whereby heat transfer fluid will flow within said tube in counterflowing relationship with said second liquid exterior of said tube;

pump means for circulating the heat transfer liquid through said closed loop;

means for sensing the temperature of the heat transfer fluid and of the second liquid within said tank means; and

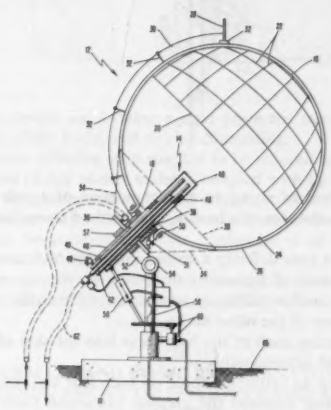
means responsive to the sensed temperatures for energizing said pump means to circulate the heat transfer liquid through said tube when the temperature of the heat transfer liquid exceeds that of the second liquid in said tank means by predetermined amount.

4,126,123

SOLAR ENERGY COLLECTOR INCLUDING A WEIGHTLESS BALLOON WITH SUN TRACKING MEANS

Frederick F. Hall, 2452 Villaneuva Way, Mountain View, Calif. 94040

Filed Feb. 24, 1977, Ser. No. 767,121
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **23 Claims**



1. A solar energy collector having a weightless balloon, comprising, in combination:

(a) a base;

(b) a spherical, reinforced plastic balloon having a substantially transparent hemisphere and an internally reflective hemisphere, said balloon being inflated with a lighter-than-air gas making the balloon substantially weightless;

(c) a multi-tube boiler probe hermetically secured in an opening in said balloon, said opening being substantially centrally located in the surface of said reflective hemisphere and the longitudinal axis of said probe being substantially normal to the plane of the balloon equator defined between the two hemispheres, a portion of said probe being outside said balloon, and a portion extending into said balloon at the focus of sunlight reflected from said reflective hemisphere;

(d) means for conducting coolant to and from said probe, said coolant entering and exiting the portion of said probe outside said balloon and circulating within the tubes of said probe through the portion of the probe in the balloon,

said coolant being heated within said probe by sunlight striking the probe; and

(e) means for securing said balloon and probe to said base, said securing means including means for tilting and rotating said balloon relative to said base to maintain said balloon in a predetermined orientation with the sun for optimum transmission of sunlight through said transparent hemisphere to said probe and said reflective hemisphere.

4,126,124

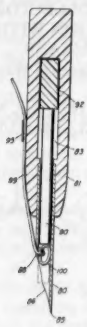
METHOD OF SIZING A HAIR ANCHOR

Paul W. Miller, Atlanta, Ga., assignor to Hairegenics, Inc., Atlanta, Ga.

Division of Ser. No. 637,843, Dec. 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 516,887, Oct. 22, 1974, Pat. No. 3,998,230. This application Sep. 6, 1977, Ser. No. 830,416

Int. Cl.[2] A61B *17/00*

U.S. Cl. 128—1 R **2 Claims**



1. A method of sizing an anchor portion of a hair to be implanted in the skin of a human, said method comprising the steps of:

(a) tieing a knot defining a special interstice of determining size in each of a plurality of hairs with the size of each knot interstice differing substantially from that of the interstices of the other knots;

(b) implanting each of the hair knots into the skin of a human; and subsequently

(c) exerting an extraction force on each hair and observing which hair required the greatest extraction force to be extracted without hair breakage.

4,126,125

METHOD FOR DECREASING THE EMOTIONAL INFLUENCE ON INSTRUMENTAL DIAGNOSTICAL MEASUREMENTS

Mihály Ágoston, Budapest, Hungary, assignor to Medicor Muvek, Budapest, Hungary

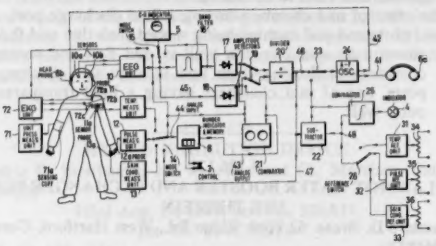
Filed Feb. 6, 1976, Ser. No. 655,680

Claims priority, application Hungary, Feb. 13, 1975, ME 1834

Int. Cl.[2] A61B *5/04*

U.S. Cl. 128—2.1 B **7 Claims**

1. A method for decreasing the emotional influence of instrumental diagnostical measurements, comprising the steps of: encouraging a patient, practicing the instrumental biofeedback method by observing a signal fed back to the patient, which signal is indicative of the success of the activity, to strive toward and reach a predetermined, instrumentally displayed value which corresponds to a condition termed the rest condition; observing the success of this activity on instruments of a measuring arrangement; and eventually carrying out the diagnostical measurements during the successful use of the feedback method, which use corresponds to the reading of the predetermined value.



4,126,126

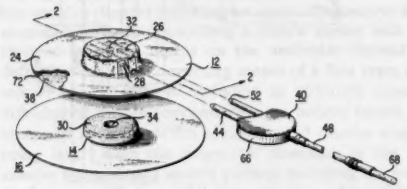
NON-METALLIC PREGELLED ELECTRODE

Rex O. Bare; Earl F. Robinson, both of Lawrence, and Kevin R. Smith, Leawood, all of Kans., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jul. 27, 1976, Ser. No. 709,140

Int. Cl.[2] A61B *5/04*

U.S. Cl. 128—2.06 E **14 Claims**



1. A medical electrode pad for attachment to the skin comprising a disk of electrically nonconductive material having a flat base and a centrally located cup shaped cavity therein, an electrolyte saturated porous plastic matrix received in said cavity, an adhesive on the surface of said flat base, and a release backing covering the adhesive surface and enclosing the matrix in the cavity; puncturable membrane means in said disc adapted to be punctured by a connector, and a removable electrically conductive connector inserted through and puncturing said membrane means and being in intimate contact with said electrolyte saturated porous plastic matrix.

4,126,127

SUCTIONING/OXYGENATING LARYNGOSCOPE BLADE

Laurence M. May, Rte. 1, Box 214-A, Ponchatoula, La. 70454

Filed Sep. 27, 1976, Ser. No. 726,839

Int. Cl.[2] A61B *1/06*

U.S. Cl. 128—11 **9 Claims**

1. In apparatus embodying an illuminated, transversely arched laryngoscope blade, shaped to facilitate rapid endotracheal inturbation of a patient, the improvement wherein there is included within the transverse arch of said blade a pair of lumens formed inside the wall forming said blade and constituting an integral part of said blade, a first lumen extending lengthwise from the proximate end at which an oxygen inlet attachment means is provided, through an edge of said blade and ending at a port located at the distal end of said blade to provide a conduit for delivering essentially pure oxygen to the posterior pharnx of the patient, and a second lumen extending lengthwise from the proximate end at which a suction inlet

attachment means is provided, through the opposite edge of said blade to a port at the tip of the blade which provides a

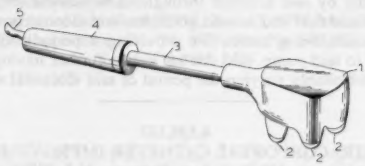
suction conduit for the removal of fluids as the blade is advanced into the patients mouth and beyond, as during endotracheal inturbation of a patient.

4,126,128

ELECTRIC DEVICE FOR THERMALLY STIMULATING AUTONOMIC NERVOUS SYSTEM

Haruo Takahashi, 8-11, Haracho 3-chome, Suita, Japan

Filed Apr. 4, 1977, Ser. No. 784,626
Int. Cl.[2] A61H *29/00*
U.S. Cl. 128—24.3 **13 Claims**



1. An electric device for thermally stimulating the autonomic nervous system, said device comprising:

a plurality of positive characteristic thermistor heaters spaced from each other;

heat conducting means between said heaters for regulating the flow of heat from said heaters;

skin contacting means attached to said heat conducting means for contacting the skin of a person, stimulating the skin, and transmitting heat from said heaters through said conducting means to the skin; and

said heat conducting means permitting sufficient heat to reach said contacting means to raise said contacting means to a temperature higher than that required for mild moxibustion and said heat conducting means further being able to control the amount of heat from said heaters to said contacting means to compensate for the heat lost from said contacting means when said contacting means is contacting skin.

4,126,129

METHOD AND APPARATUS FOR RELIEVING BACKACHES AND PAINS WITHOUT THE USE OF DRUGS

John R. Rainbow, 41 E. 7th St., New York, N.Y. 10003

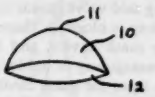
Continuation of Ser. No. 767,739, Mar. 2, 1977, abandoned. This application Mar. 13, 1978, Ser. No. 885,365
Int. Cl.[2] A61H *7/00, 5/00*
U.S. Cl. 128—67 **10 Claims**

1. A method for relieving backaches and pains of a person, comprising;

a. providing a generally hemispheric dome of hard nonresilient material, said dome having an apex and a flat base with a nonskid surface on said base, having a height from it's base to it's apex of between about 1½ to 2¼ inches (3.81 to 5.71 cms.) and having a diameter at it's base of approximately two times said height;

b. placing said dome on a substantially flat rigid support surface having a surface area at least coinciding with the area of the major portion of said person's back from buttocks to shoulders;

c. said person placing his or her back against said dome in



position for said apex of said dome to be at least closely adjacent to an area of said back at which pain is located, but not directly against said person's spinal column; and

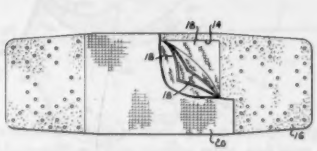
d. causing said area of said back to press against said dome.

4,126,130

WOUND PROTECTIVE DEVICE

Ernest A. Cowden, Kansas City, and Leo E. Lauber, Eudora, both of Kans., assignors to The Clear Corporation, Eudora, Kans.

Filed Apr. 15, 1977, Ser. No. 787,834
Int. Cl.[2] A61F *5/04*
U.S. Cl. 128—91 R **5 Claims**



1. A device for forming a rigid protector over an injured portion of the body, said device comprising:

a plastic adhesive strip adapted to be secured to body;

a layer of dry plaster material coupled with said strip,

said dry plaster material being adapted to be activated upon contact with water to present a hardenable material which may be conformed to the configuration of the injured portion of the body; and

means for covering the plaster material to preclude contact between the plaster and said injured portion.

4,126,131

FACEMASK AND GOGGLE COMBINATION FOR EXCLUDING SMOKE OR NOXIOUS GASES FROM THE GOGGLES

Donald G. Davis, Azusa; John Wippler, Downey, both of Calif., and David L. Heitman, Midwest City, Okla., assignors to Sierra Engineering Co., Sierra Madre, Calif.

Filed Mar. 18, 1977, Ser. No. 779,138
Int. Cl.[2] A62B *7/00*
U.S. Cl. 128—142.4 **16 Claims**

1. In equipment for aiding breathing and vision, of the type comprising:

goggle means having a transparent element covering the eyes of a user and defining a goggle cavity;

face mask means adapted to fit the face area around a user's nose and mouth to provide a mask cavity between the mask means and the face area and to be used simultaneously with said goggle means covering the eyes of the user;

means for injecting breathable gas into said mask cavity;

an exit passageway from said mask cavity to the exterior of the mask means and extending within said goggle cavity between said transparent element of said goggle means and the eyes of the user; and and

means at said passageway, capable of permitting or preventing egress of gas from said mask cavity;

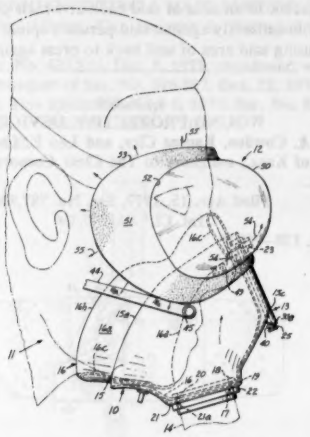
the improvement wherein:

said means at said passageway is a slidable valve means having a longitudinal axis, which can be slid longitudinally into and out of the passageway; and

said improvement comprises:

means for sliding said valve means to a first position at which said passageway is blocked, thereby preventing egress of gas from the mask cavity, and to a second position at which said passageway is unblocked, thereby permitting egress of gas from the mask cavity; and

manually operable means attached to said valve means for sliding the valve means, located outside of the mask cavity



at a position where it is always outside the goggle cavity so that it can be manually operated at all times including times when the goggle means is fitted to the face in its said normal position;

whereby when the goggle means is placed over the user's face in a manner positioning the goggle cavity at the vicinity of the eyes the breathable gas flows through the passageway from the mask cavity into the goggle cavity to flush the goggle cavity when said manually operable means slides said valve means to its first position, but is blocked from flowing out of the mask cavity when said valve means is slid to its second position.

4,126,132

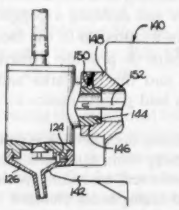
INTRAVENOUS AND INTRA ARTERIAL DELIVERY SYSTEM

Peer M. Portner, Berkeley, and Jal S. Jassawalla, San Francisco, both of Calif., assignors to Andros Incorporated, Berkeley, Calif.

Continuation-in-part of Ser. No. 599,330, Jul. 28, 1975, abandoned. This application Jun. 30, 1976, Ser. No. 701,238

Int. Cl.[2] A61M *5/00*

U.S. Cl. 128—214 F **11 Claims**



1. A system for pumping fluids for intravenous injection comprising a cassette, a pump and electric pump control means, said cassette having: a cassette body defining a chamber having an inlet port and an outlet port, said inlet port having a means for coupling to a source of fluid to be injected; first valve means coupled to said inlet port for allowing unidirectional flow into said chamber through said inlet port; first valve biasing means for preloading said first valve means to a closed position an amount so as to be opened by a substantial fluid pressure above said first valve means, second valve means coupled to said outlet port for allowing unidirectional flow out of said chamber through said outlet port; second valve biasing means for preloading said second valve means to a closed position an amount so as to be opened by a substantial fluid pressure in said chamber, said second valve biasing means including means for relieving the bias of said second valve means to the closed position when said cassette is decoupled from said pump; movable means comprising a diaphragm defining a part of said chamber for varying the volume of said chamber in response to movement of said movable means, and collector means coupled to said outlet port for directing fluid from said outlet port toward a needle; said pump having: means for detachably coupling to said cassette; a linear actuator movable between first and second positions by an electrical signal for providing a mechanical motion in response to electrical input, said actuator being engageable with said diaphragm on said cassette when said pump is coupled to said cassette and being positioned such that said diaphragm is always distended inwardly by said actuator throughout movement thereof between said first and second positions, said electric pump control means being means for providing a periodic electrical signal to said pump, said control means further having means for controllably varying the period of said electrical signal.

4,126,133

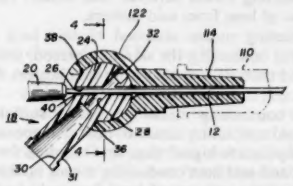
INTRACORPOREAL CATHETER IMPROVEMENT

Boris Schwartz, 400 Park Ave., Paterson, N.J. 07504

Filed Jul. 13, 1977, Ser. No. 815,207

Int. Cl.[2] A61M *5/00*

U.S. Cl. 128—214.4 **14 Claims**



1. A rotatable tub assembly attachable to a single-channeled intracorporeal catheter, said assembly having a receiving socket for connection to the distal end of a fluid conducting system for feeding, injecting and draining, said assembly for use with a catheter member of flexible tubing having its intermediate portion formed with a relatively constant bore, said catheter having a distal end of tapered configuration and having its other end secured in a fluid-tight manner to a hub, said rotatable hub including: (a) a hub portion having a circular receiving recess formed therein and a connecting passageway from said recess and adapted to connect with the bore in the flexible catheter; (b) a rotatable member having a substantially circular portion mountable in said circular receiving recess in a fluid-tight manner and in said recess movable to two limits of rotation, this rotatable member having two passageways therethrough with each passageway in a plane generally normal to the axis of rotation of the movable member, a first passageway in alignment with the bore in the catheter when the rotatable member is in a first limit of movement and a second passageway having a flow connection with said catheter bore when the movable member is turned to the other limit of movement in said recess; (c) a hub portion formed in and on the rotatable member and extending exterior of said circular portion, this

hub portion having a tapered socket formed therein, this socket adapted to receive and retain an end of a fluid conductor such as an intravenous fluid tubing and the like, the inner end of this socket flow connected to the second passageway, and (d) means for retaining the circular portion of the rotatable member in the circular recess formed in the hub portion of the rotatable assembly, the rotatable member when in the first position having the first passageway aligned with the bore of the catheter providing a substantially straight passageway through the catheter hub and assembly for the mounting therein of a needle which may be used to assist venipuncture and placement of the catheter in the body of the patient, the second passageway when the rotatable member is in the first position having its distal end closed to fluid flow by a portion of the wall of the circular recess and with the rotatable member at the second limit of movement this second passageway is in flow connection with the bore of the catheter and the ends of the first passageway formed in the circular portion of the rotatable member are moved from in way of a fluid flow to the catheter.

4,126,134

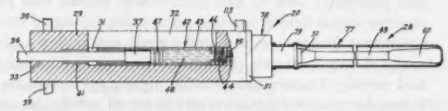
DISPENSING INSTRUMENT

Lee R. Bolduc, Minneapolis, and Eugene A. Dickhudt, St. Paul, both of Minn., assignors to Population Research Incorporated, Clearwater, Fla.

Continuation of Ser. No. 369,710, Jun. 13, 1973, abandoned. This application Jan. 24, 1975, Ser. No. 543,876

Int. Cl.[2] A61M *1/00*

U.S. Cl. 128—235 **44 Claims**



1. A dispensing instrument comprising: housing means having a chamber for accommodating a container storing material, an elongated member attached to said housing means, expandable means mounted on the elongated member, said expandable means including an elastic and flexible sleeve surrounding a chamber, sheath means enclosing the elongated member and expandable means, said sheath means including an elastic and flexible cover located over the sleeve, tubular needle means for delivering material from the container to the outside of the sheath means, means releasably connecting the sheath means to the housing means, and means to provide fluid under pressure to the chamber surrounded by the sleeve whereby fluid under low pressure within the chamber expands the sleeve and cover.

4,126,135

SELF-STANDING COLLAPSIBLE URINARY DRAINAGE BAG

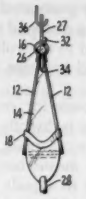
Frank Hinman, Jr., 1000 Francisco St., San Francisco, Calif. 94109

Filed Dec. 30, 1976, Ser. No. 755,621

Int. Cl.[2] A61F *5/44*

U.S. Cl. 128—275 **6 Claims**

5. An adapter for supporting a flexible urinary bag, said adapter comprising: a pair of generally rigid leaves; spring biased hinges securing said leaves together at the apical edges thereof for movement between a collapsed condition wherein the leaves are disposed in face-to-face, generally juxtaposed, relationship to one another and an extended condition wherein the lower edges of the leaves are spread relative to one another to provide a self-standing structure, said hinges normally biasing the leaves toward the collapsed condition and being so disposed that the apical edges of the leaves spread upon forcing of the leaves apart; portions on said apical edges of the leaves to releasably secure a flexible urinary bag to said adapter in a position suspended between said leaves wherein, when the



leaves are suspended from above, the bag projects partially beneath the lower extremities of the leaves.

4,126,136

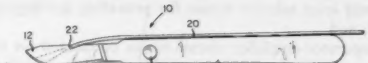
PHOTOCOAGULATING SCALPEL SYSTEM

David C. Auth, Bellevue, and Robert F. Rushmer, Seattle, both of Wash., assignors to Research Corporation, New York, N.Y.

Filed Feb. 9, 1976, Ser. No. 656,709

Int. Cl.[2] A61B *17/36*

U.S. Cl. 128—303.1 **20 Claims**



1. A photocoagulating scalpel system comprising a scalpel having a blade with a sharp cutting edge, and laser means for coagulating blood including light transmitting means connected to said scalpel for conveying laser radiation to a location closely adjacent and exterior to said cutting edge such that while said blade forms incisions said laser radiation moves in correspondence with the movement of said blade thereby coagulating blood adjacent said cutting edge.

4,126,137

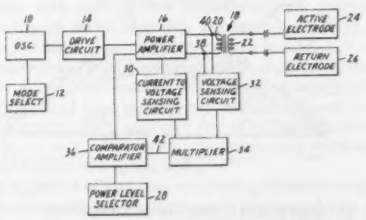
ELECTROSURGICAL UNIT

G. Kent Archibald, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jan. 21, 1977, Ser. No. 760,847

Int. Cl.[2] A61B *17/36*; A61N *3/00*

U.S. Cl. 128—303.14 **6 Claims**



1. An improved electrosurgical unit for providing electrosurgical currents to electrically conductive tissue from a controllable power amplifier connected to the primary winding of an output transformer with the secondary winding of the transformer connected to an active electrode and return electrode between which the tissue to receive an electrosurgical current is positioned, the improvement therein being a feedback control circuit comprising:

a first sensing means connected for sensing a current in the unit and providing a first signal in response thereto that is

directly related to the current delivered to tissue when presented between the active electrode and return electrode;

a second sensing means connected for sensing a voltage in the unit and providing a second signal in response thereto that is directly related to the voltage presented across the tissue when presented between the active electrode and return electrode;

a multiplier circuit means for receiving two signals and providing a signal that is directly related to the mathematical product of said two signals;

a compensation circuit means having a first and a second input and responsive to signals applied to said first and second inputs for providing one of said two signals for said multiplier circuit means that is a modification of the signal applied to said first input, said modification being a function of the signal applied to said second input, said compensation circuit means connected to said multiplier circuit means to provide said one of said two signals to said multiplier circuit means, said multiplier circuit means connected for receiving one of said first and second signals as the other of said two signals, said compensation circuit means connected to said first and second sensing means for receiving said one of said first and second signals at said second input and the other of said first and second signals at said first input;

a power level selector means for providing a reference signal; and

a comparator-amplifier circuit means connected for receiving said signal provided by said multiplier circuit means and connected for receiving said reference signal and having an output connected to said controllable power amplifier, said comparator-amplifier circuit means providing a signal at said output in response to said signal provided by said multiplier circuit means and said reference signal for controlling the controllable power amplifier wherein a transfer of power at a substantially constant level is made to tissue when presented between the active electrode and return electrode.

4,126,138

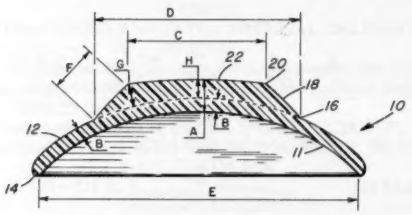
SOFT CONTACT LENS

Allan A. Isen, Westport, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 479,233, Jun. 14, 1974, abandoned. This application May 16, 1977, Ser. No. 796,941

Int. Cl.[2] G02C 7/04

U.S. Cl. 351—160 R **11 Claims**



1. An integral soft contact leans comprising:

(a) a continuous concave eye contacting inner surface,

(b) an annular carrier portion having an outer diameter of about 13 to about 15.5 mm., an inner diameter of about 9.0 to about 10.5 mm. and a convex outer surface spaced from said inner surface a distance of about 0.20 to about 0.35 mm.,

(c) an optical portion encompassed by said carrier portion, said optical portion including a convex outer surface having a radius of curvature equal to or greater than the inner surface radius of curvature and with all points thereon spaced from said inner surface not less than a distance in a range of about 0.60 to about 0.80 mm., and a diameter of about 6.0 to about 7.5 mm., and

(d) an intermediate portion interconnecting said carrier portion and said optical portion, said intermediate portion including an outer surface extending downwardly and outwardly from the outer surface of said optical portion to the outer surface of said carrier portion.

4,126,139

METHOD AND MEANS FOR RECEIVING PARAMETER CONTROL DATA IN AN IMPLANTABLE HEART PACER

Robert A. Walters, Pittsburgh, and Steve A. Kolenik, Leechburg, both of Pa., assignors to ARCO Medical Products Company, Leechburg, Pa.

Filed May 20, 1977, Ser. No. 799,060

Int. Cl.[2] A61N 1/36

U.S. Cl. 128—419 PG **20 Claims**

1. An implantable cardiac pacer adapted for connection to electrode means for delivering stimulus signals to and receiving signals from a human heart, and being further adapted to be programmed according to an external signal comprising intermixed parameter data and access data transmitted serially to said pacer, comprising:

demand generator means having an output adapted for connection to said electrode means, for generating stimulus pulses at said output for delivery to said electrode means in the absence of detected heartbeat signals;

controllable means for controlling at least ones operating parameter of said demand generator means as a function of received parameter data;

parameter signal delivery means for controlled delivery of said parameter data to said controllable means, said parameter signal delivery means comprising (a) signal storage means for storage of digital signals and having a plurality of data locations; (b) receiving means for receiving said serially transmitted external signal; (c) connecting means for connecting said received signal serially to said signal storage means so that the data from said received signal is stored in respective different data locations; and (d) comparing means connected to said signal storage means for comparing in a predetermined manner the data in predetermined ones of said locations and for enabling said delivery of parameter data as a function of said comparison, thereby controlling said at least one operating parameter in accordance with said external signal.

4,126,140

SMOKING TOBACCO AND SMOKING TOBACCO FLAVORING COMPOSITIONS CONTAINING HYDROXY CYCLOHEXENONE DERIVATIVES

Kenneth K. Light, Long Branch; Bette M. Spencer, Ocean Grove; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y.; Manfred H. Vock, Locust, N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

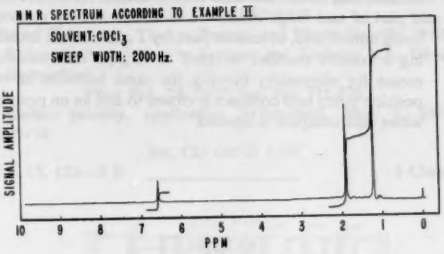
Division of Ser. No. 774,059, Mar. 3, 1977, Pat. No. 4,084,009. This application Nov. 15, 1977, Ser. No. 851,684

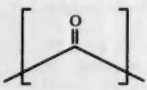
Int. Cl.[2] A24B 3/12, 15/04

U.S. Cl. 131—8 R **4 Claims**

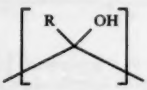
2. A smoking tobacco article comprising smoking tobacco and added to said article a smoking tobacco flavor augmenting or enhancing amount of at least one cyclohexenone derivative having the structure:

wherein one of X or Y is a keto group having the structure:





and the other of X or Y is a carbinol group having the structure:



and wherein R is C_1–C_5 alkyl.

4,126,141

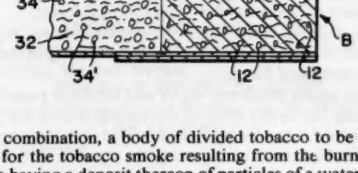
FILTER AND CIGARETTE INCLUDING A FILTER

Harold Grossman, Upper Montclair, N.J., assignor to Montclair Research Corporation, Silver Spring, Md.

Division of Ser. No. 562,214, Mar. 26, 1975, abandoned. This application Jan. 6, 1977, Ser. No. 757,143

Int. Cl.[2] A24D *1/00, 1/00;* **A24B** *15/00*

U.S. Cl. 131—9 **26 Claims**



1. In combination, a body of divided tobacco to be burned, a filter for the tobacco smoke resulting from the burning, the tobacco having a deposit thereon of particles of a water-insoluble, hydrophobic, moisture-laden substance, the major ingredient of the substance being water, the filter comprising a porous substrate having a deposit thereon of particles of a water-insoluble, hydrophobic, moisture-laden substance activatable by the tobacco smoke to release the moisture, the major ingredient of the substance being water.

4,126,142

FACE MASK

Robert E. Saute, 10236 Mossy Rock Cir., Los Angeles, Calif. 90024

Filed Apr. 20, 1977, Ser. No. 789,217

Int. Cl.[2] A45D *7/00*

U.S. Cl. 132—7 **5 Claims**

1. A skin treatment for diminishing wrinkles by plumping the skin and maintaining the skin in a plumped state comprising:

preparing an aqueous solution which includes about 2–25 weight percent polystyrene sulfonate salt having a molecular weight of less than 200,000;

about 1–20 weight percent liquid modifiers suitable for physiological use selected from the group consisting of anionic, cationic, nonionic and amphoteric plasticizers and surfactants;

about 1–20 weight percent viscolizer selected from the group consisting of natural gums, synthetic gums and vinyl polymers;

applying a thin film of said aqueous solution to one's skin;

allowing said film to dry and tighten the skin causing a plumping of the skin tissue;

removing said film; and,

immediately thereafter forming a moisture barrier over at least the skin previously covered by said film to maintain the skin in a plumped state by applying to said skin a cosmetic oil composition selected from the group consisting of animal oil, vegetable oil, mineral oil, and synthetic esters.

4,126,143

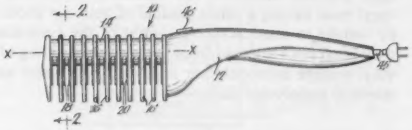
ELECTRICALLY HEATED COMB FOR HAIR STYLING

George A. Schroeder, Chicago, Ill., assignor to Johnson Products Co., Inc., Chicago, Ill.

Filed Apr. 20, 1977, Ser. No. 789,117

Int. Cl.[2] A45D *24/00*

U.S. Cl. 132—11 A **13 Claims**



1. A heated hair comb comprising:

a handle,

a heat conducting element secured to said handle and extending outwardly therefrom, said heat conducting element having an outer surface;

a plurality of spaced apart unheated protective teeth carried by one of said handle and said heat conducting element; and

a plurality of spaced apart heat conducting teeth carried by said heat conducting element, each of said heat conducting teeth having at least one exposed heating surface,

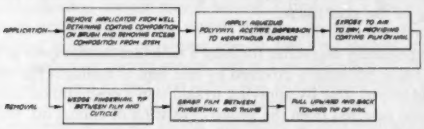
wherein said protective teeth and said heat conducting teeth are aligned in a row along the longitudinal axis of said comb and project outwardly from said heat conducting element, with each of said protective teeth projecting outwardly in all directions in the median plane of said protective tooth a greater distance than immediately adjacent ones of said heat conducting teeth, each pair of immediately adjacent protective teeth having at least portions of two of said heat conducting teeth positioned in the space between them, with only one of the exposed heating surfaces of each of said two heat conducting teeth being located within said space, and

wherein segments of said heat conducting element comprise the outside surface of said comb between said two heat conducting teeth which are positioned in the space between each pair of immediately adjacent protective teeth, said outer surface of said heat conducting element defining said outside surface of said comb about the entire periphery of each said segment of said heat conducting element,

whereby each hank of hair positioned between an adjacent pair of said heat conducting teeth when the comb is in use receives heat from an exposed heating surface of said heat conducting teeth on both sides of said hanks of hair and segments of said heat conducting element are exposed

about the entire periphery of said heat conducting element for transmitting heat to hair when the comb is in use.

4,126,144
PEELABLE HUMAN NAIL COATINGS
Patricia A. Duarte, 16321 Malden St., Sepulveda, Calif. 91343
Filed Dec. 30, 1976, Ser. No. 755,735
Int. Cl.[2] A45D *29/00*
U.S. Cl. 132—73 **22 Claims**

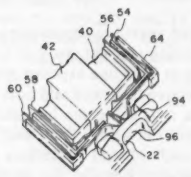

APPLICATION
REMOVE APPLICATOR FROM WELL RETAINING COATING COMPOSITION ON BRUSH AND REMOVING EXCESS COMPOSITION FROM STEM
APPLY AQUEOUS POLYVINYL ACETATE DISPERSION TO KERATINOUS SURFACE
EXPOSE TO AIR TO DRY, PROVIDING COATING FILM ON NAIL
REMOVAL
WEDGE FINGERNAIL TIP BETWEEN FILM AND CUTICLE
GRASP FILM BETWEEN FINGERNAIL AND THUMB
PULL UPWARD AND BACK TOWARD TIP OF NAIL

1. A nail coating system for use in applying films to human nails comprising:

a sealable container including a liquid receptacle defining a well, a liquid nail coating composition within the well and a closable cap mating with the liquid receptacle to seal the well from the atmosphere, the cap including means extending into the well for receiving the liquid nail coating composition and for applying the composition to a keratinous surface; and in which

the liquid nail coating composition comprises an aqueous latex polymer emulsion, the emulsion comprising poly vinyl resin having a solids content of between about 35% by weight to about 60% by weight of the emulsion, the poly vinyl resin selected from the group consisting of poly vinyl acetate homopolymer resin and poly vinyl acetate ethylene copolymer resin.

4,126,145
LIGHTED COMPACT
Raymond Boyd, 2235 Cambridge Rd., Broomall, Pa. 19008
Filed Mar. 11, 1977, Ser. No. 776,593
Int. Cl.[2] A45D *33/00, 33/32*
U.S. Cl. 132—83 R **9 Claims**



1. A lighted compact providing a thin profile comprising:

a shallow bottom case member;

a shallow cover member having a configuration complementary to the peripheral configuration of said bottom case member;

hinge means joining said bottom case member and said cover member for pivotal movement between an opened position and a closed position, part of said hinge means being carried by said bottom case member and part of said hinge means being carried by said cover member;

a mirror positioned within said cover member;

a battery positioned within said cover member behind said mirror;

light diffusing means positioned within said cover member adjacent said mirror;

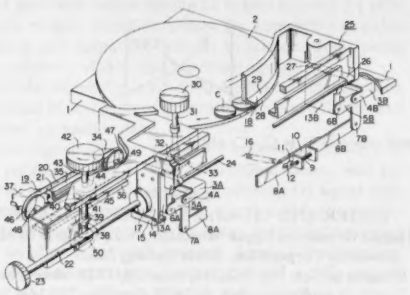
electrically operated illuminating means positioned behind said light diffusing means;

switch means positioned within said cover member and including movable actuator means;

circuit means electrically interconnecting said battery, said illuminating means and said switch means;

said part of said hinge means on said bottom case member being constituted, at least in part, by a cam surface including a control member adapted to engage said actuator means for alternately moving the same between an off position when said compact is closed to and an on position when said compact is opened.

4,126,146
COIN DELIVERING DEVICE OF COIN PROCESSING MACHINE
Ichiro Ozaki, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Japan
Filed Oct. 15, 1976, Ser. No. 732,616
Claims priority, application Japan, Oct. 17, 1975, 50-141615[U]; Jul. 10, 1976, 51-92238[U]
Int. Cl.[2] G07D *3/00*
U.S. Cl. 133—3 A **8 Claims**



1. A coin delivering device for use in a coin processing machine comprising:

a base member;

a turntable rotatably supported on said base member and adapted to move coins to be processed towards the periphery of said turntable by centrifugal force;

means defining a coin passage communicating with said turntable periphery to receive coins discharged therefrom by centrifugal force;

limiting means positioned above said turntable periphery for setting the upper limit of the thickness of coins passing from said turntable periphery to said coin passage;

adjustment means for adjusting the distance between said limiting means and said turntable periphery in accordance with the thickness of coins to be processed by said device;

coin propelling means positioned above said coin passage for propelling coins along said coin passage;

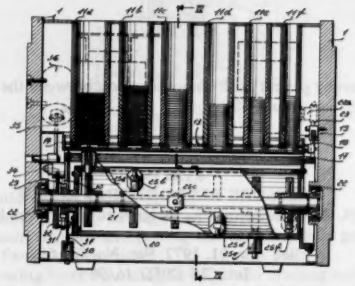
cover means supporting said limiting means and said coin propelling means;

support means pivotally supporting said cover means on said base member for pivotal movement between a closed position, in which said limiting means and said coin propelling means overlie said turntable and said coin passage respectively, and an open position, in which said limiting means and said coin propelling means are separated from said turntable and said coin passage, said support means including adjustable link means for controlling the support of said cover to maintain the horizontal evenness of the distance between the lower surface of said limiting means and the upper surface of said turntable when said cover means is in the closed position.

4,126,147
METHOD OF GIVING CHANGE AUTOMATICALLY AND A COIN DISPENSER

Marcel Brisebarre, Thoiry, France, and Pierre Repetti, Prilly, Switzerland, assignors to Systems and Technics S.A., Gland, Switzerland

Filed Feb. 23, 1977, Ser. No. 771,370
Claims priority, application Switzerland, Mar. 1, 1976, 2490/76
Int. Cl.² G07D *1/06*
U.S. Cl. 133—5 R **6 Claims**

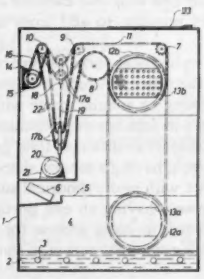


1. A coin dispenser comprising a plurality of upright coin chutes for containing a plurality of different denominations of coins in stacks disposed side-by-side, a horizontal cylinder disposed beneath the stacks, means for continuously rotating the cylinder, a plurality of pegs having radially extending inner and outer ends and mounted on the cylinder for radial movement relative to the cylinder, said pegs being disposed in a helical arrangement about the periphery of the cylinder with one peg disposed beneath each stack and the pegs spaced from each other both parallel to the axis of the cylinder and angularly about the periphery of the cylinder, and means for selectively individually moving said pegs radially outwardly relative to the cylinder when a said peg is disposed beneath the stack of coins of which one is to be dispensed, whereby the outer end of the selectively extended peg contacts the edge of the lowermost coin in the stack and dispenses that contacted coin from the stack.

4,126,148
DEGREASING APPARATUS

Göte J. W. Norström, Karlstad, Sweden, assignor to Uddeholms Aktiebolag, Hagfors, Sweden

Filed Sep. 8, 1977, Ser. No. 831,600
Claims priority, application Sweden, Sep. 30, 1976, 7610875
Int. Cl.² B08B *3/10*
U.S. Cl. 134—135 **2 Claims**

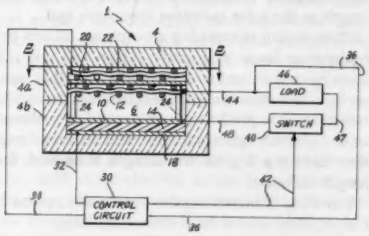


1. Degreasing apparatus comprising a container (1) for liquid or vaporised solvent, a holder (13) for objects to be degreased, a lifting means to lower the holder (13) into and lift it out of the solvent, the lifting means comprising two wheels (12), preferably sprocket wheels, secured to the holder (13) and two belts (11), preferably chains, supporting said wheels (12), as well as a rotary means to cause the wheels (12) with the holder (13) to rotate, characterized in that the two belts (11) are endless, that the lifting means consists of means (17–21) to form at least one loop (22) on each of said endless belts (11), the size of the loop (22) determining the level of said holder (13), and that the rotary means consists of a drive means (14–16) for at least one stationarily arranged roller (10) over which at least one of the endless belts (11) is arranged to run, so that the wheels (12) with the holder (13) can be caused to rotate irrespective of the level at which they are hanging.

4,126,149
SOLAR ENERGY ELECTRICAL CONVERSION APPARATUS

Ronald P. Reitz, Annapolis, Md., assignor to Tom Swift Enterprises, Inc., Annapolis, Md.

Filed Jun. 10, 1977, Ser. No. 805,399
Int. Cl.² H01L *31/04*
U.S. Cl. 136—89 AA **21 Claims**

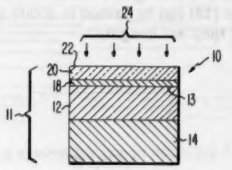


1. Apparatus for producing electrical energy from electromagnetic radiation comprising:
(a) means for emitting electrons in response to said electromagnetic radiation,
(b) means for collecting said electrons, said collecting means positioned proximate to and on one side of said emitting means and spaced therefrom,
(c) a first electrode means positioned proximate said emitting means, said first electrode means positioned on the other side of said emitting means,
(d) said first electrode means spaced from said emitting means whereby a first dielectric region is established therebetween,
(e) second electrode means positioned proximate said collecting means, said second electrode means positioned on a side of said collecting means away from said emitting means,
(f) said second electrode means spaced from said collecting means whereby a second dielectric region is established therebetween,
(g) means for securing said emitting means, collecting means, first electrode means and second electrode means together as a unit, said securing means permitting entry of electromagnetic radiation onto said electron emitting means, and providing at least a partial vacuum between said emitting means and said collecting means,
(h) means for controllably charging and discharging said first and second electrode means, and
(i) means for electrically connecting said emitting means and said collecting means in circuit with a load which is desired to be driven.

4,126,150
PHOTOVOLTAIC DEVICE HAVING INCREASED ABSORPTION EFFICIENCY

Alan E. Bell, East Windsor; Brown F. Williams, Princeton, both of N.J., and David E. Carlson, Yardley, Pa., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 782,190, Mar. 28, 1977, abandoned. This application Nov. 3, 1977, Ser. No. 848,250
Int. Cl.[2] H01L *31/06*
U.S. Cl. 136—89 TF **17 Claims**



1. An amorphous silicon photovoltaic device comprising:
a solar radiation transparent layer having an incident surface on which solar radiation is capable of impinging, and wherein said transparent layer has a thickness such that said incident surface is substantially non-reflecting to incident solar radiation at a predetermined first wavelength in the solar radiation spectrum; and
an active region comprising amorphous silicon below said transparent layer, said active region and said transparent layer having a combined thickness such that said incident surface is substantially non-reflecting to incident solar radiation at a predetermined second wavelength in the solar radiation spectrum, said second wavelength radiation having a higher wavelength than said first wavelength radiation.

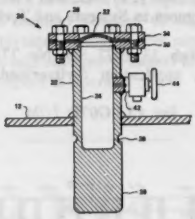
12. A method of increasing the photon absorption efficiency of an amorphous silicon solar cell comprising:
depositing an active region of amorphous silicon on a substrate forming an electrical contact thereto and a transparent antireflection layer substantially nonreflecting to solar radiation at a first predetermined wavelength on said active region such that the combined thickness of said transparent layer and said active region is substantially nonreflecting to solar radiation at a predetermined second wavelength in the solar spectrum, said second wavelength radiation having a higher wavelength than said first wavelength radiation.

4,126,151
IMPACT SENSITIVE SAFETY-RELIEF SYSTEM FOR TANK CARS

Wendell A. Bullerdiek, East Aurora, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Mar. 8, 1977, Ser. No. 775,499
Int. Cl.[2] F16K *17/36*
U.S. Cl. 137—43 **5 Claims**

1. An impact sensitive safety-relief system adapted for installation in the wall of a pressurized vessel including:
housing means;
said housing means having a thin walled section defining a blind bore which is normally at essentially atmospheric pressure and an integral solid section defining an inertia mass;
a weakened section formed in said thin walled section of said housing means to define a frangible area;
whereby when said solid section and said weakened section are located within a pressurized vessel, inertial forces acting on said solid section can cause the breaking of said weakened section and thereby the separation of said solid section from said thin walled section to open said bore and

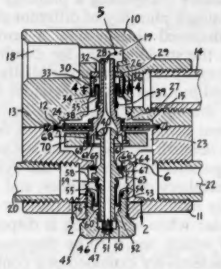


thereby permit fluid communication between the pressurized vessel and said bore.

4,126,152
PRESSURE REPRODUCING RELAY

David B. Kirk, Hilltown, Pa., assignor to Moore Products Co., Spring House, Pa.

Filed Apr. 21, 1977, Ser. No. 789,662
Int. Cl.[2] G05D *16/00*
U.S. Cl. 137—85 **7 Claims**



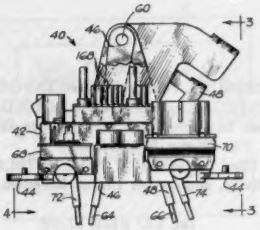
1. In a pneumatic relay for producing a delivered fluid pressure in response to an applied condition,
a housing,
a connection to said housing from a source of fluid pressure,
a fluid delivery connection connected to said housing,
a connection to said housing for applying therein a variable condition,
a first movable member responsive to said applied condition and to the pressure at said delivery connection,
a second movable member comprising valve means controlled by said first movable member for supply and exhaust of fluid pressure to and from said fluid delivery connection,
spaced coaxial cylindrical surfaces one of which is in said housing and the other of which is on one of said movable members defining an annular space within said housing,
a sealing element in said housing separating said space into two regions subject to different fluid pressures,
said sealing element having a tubular shape with portions for rolling contact with said cylindrical surfaces,
said sealing element having an end portion which is of increased thickness in cross section for pressure-tight engagement with a stepped portion of the adjacent cylindrical surface,
a fluid passageway extending between said end portion and said region with the lower pressure for venting the interface between said element and adjacent cylindrical surface to said region with the lower pressure.

4,126,153

COMBINED ELECTRICAL SWITCH AND FLUID POWER CONTROL DEVICE

Andrew F. Raab, Morton Grove, Ill., assignor to Indak Manufacturing Corp., Northbrook, Ill.

Filed Jan. 24, 1977, Ser. No. 761,772
Int. Cl.[2] H01H *3/04*; F16K *33/44*
U.S. Cl. 137—353 **11 Claims**



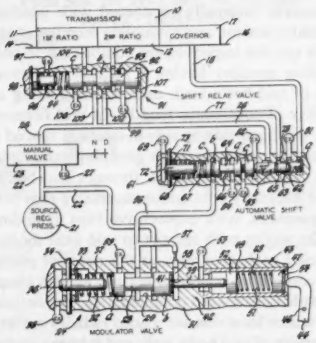
1. A fluid power control device,
comprising a casing having front and rear sides,
said casing having an opening therein extending between said front and rear sides,
an operating lever extending through said opening and movable therein,
said lever having a rear portion at the rear of said casing,
said casing having means at the rear thereof pivotally supporting said rear portion of said lever to support said lever for swinging movement in said opening and about a pivot axis,
said lever having a front manually operable portion at the front of said casing,
a fluid power slide valve member slidable in said casing in a lateral direction relative to said lever,
said laterial direction being generally parallel with said pivot axis,
said member having cam follower means thereon,
and a cam on said lever and slidably engaging said cam follower means,
said cam having a lateral throw in said lateral direction for moving said slide valve member in said lateral direction and generally parallel with said pivot axis of said lever.

4,126,154

SHIFT SIGNAL VALVE HYSTERESIS

Ted M. McQuinn, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 9, 1977, Ser. No. 804,914
Int. Cl.[2] B60K *41/18*; F15D *1/02*
U.S. Cl. 137—625.69 **8 Claims**



1. In a control system; shift valve means having a bore with a source port, a shift signal port and an exhaust port, shift valve element means in said bore, control signal operated means operative in response to a control signal to automatically upshift and downshift said valve element means between a first position blocking said source port and connecting said shift signal port for exhaust flow to said exhaust port and a second position connecting said source port for supply flow to said shift signal port and blocking said exhaust port, and hysteresis means on said bore and shift valve element means including supply flow hysteresis means responsive to shift signal supply flow from said source port to said shift signal port for providing a hysteresis force in an upshift direction, static pressure hysteresis means responsive to static shift signal pressure in said shift signal port for providing a hysteresis force in an upshift direction and exhaust flow hysteresis means responsive to exhaust flow of shift signal fluid from said shift signal port to said exhaust port for providing a hysteresis force in an upshift direction operative for providing a hysteresis force in an upshift direction on said shift valve element while upshifting, while in second position and while downshifting.

2. In a control system; relay valve means having a first fluid pressure source port, a device supply port, a first exhaust port, biasing means normally biasing said relay valve means to first position operative to block said first source port and to connect said device supply port to said first exhaust port and chamber actuator means operative in response to the supply of shift signal pressure fluid supply flow to upshift said relay valve means from first to a second position to connect said first source port to said device supply port and block said first exhaust port, responsive to static shift signal pressure fluid to hold said relay valve means in second position and responsiveto lower exhaust pressure shift signal fluid to permit said biasing means to downshift said relay valve means from second to first position providing shift signal fluid exhaust flow; shift valve means having a bore with a second source port, a shift signal port connected to said actuator means and a second exhaust port, shift valve element means in said bore, control signal pressure operated means operative in response to signal pressure to automatically upshift and downshift said valve element means between a first position blocking said second source port and connecting said shift signal port to said second exhaust port and second position connecting said second source port to said shift signal port and blocking said second exhaust port, and hysteresis means on said bore and shift valve element means including supply flow hysteresis means responsive to shift signal supply flow from said second source port to said shift signal port, static pressure hysteresis means responsive to static shift signal pressure and exhaust flow hysteresis means responsive to exhaust flow of shift signal fluid from said shift signal port to said second exhaust port all providing a hysteresis force in an upshift direction on said shift valve element while upshifting in second position and downshifting.

4,126,155

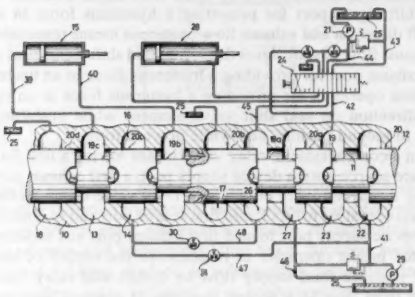
VALVE PISTON FOR HYDRAULIC CONTROL VALVE

Claus Bertram, Waltrop, Fed. Rep. of Germany, assignor to O & K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Dec. 16, 1976, Ser. No. 751,078
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557235
Int. Cl.[2] F16K *11/07, 39/04*
U.S. Cl. 137—625.69 **5 Claims**

1. A valve piston construction for hydraulic control valves having a valve member which has axially spaced piston sections at least one of which includes an end with diametrically opposite regions therebetween and separated from each other by annular grooves as well as a periphery interconnected by at least one reduced diameter portion and reciprocable in a bore in a valve body and which bore is provided with axially spaced annular grooves, said valve member controlling fluid flow via said bore between said grooves, said piston construction com-

prising in combination passage forming means located in diametrically opposite regions of the end of at least one piston section, each said passage means having one end at a radially inner region of the respective piston section end and having the other end in the form of a "U" shaped fine control groove in the periphery of the piston section radially outwardly from said one end of said passage means and having the ends opening axially from the respective piston section end, the fine control groove including lateral surfaces open semi-circularly toward the periphery of the piston and open quadrilaterally toward the end of annular grooves, an end wall of the fine control groove being provided with a milled-out portion, and a flow body having webs which engage said milled-out portions and provided with an inclined surface directed toward the end of the fine control groove and forming a well as a radial mantel surface, said flow body being eccentrically arranged in the fine control groove and being held therein in such a way that the flow body and the periphery of the piston section have the same diameter, each said passage means being formed by a notch formed into the respective piston section end and said flow body is mounted in said notch and having an inclined surface disposed in the periphery of the respective piston section, said notch extending axially into said piston section and having a bottom in the milled-out portion concave toward each piston section end, a groove extending around the inside of said notch, said flow body having webs extending into said groove to locate said flow body in said notch.



4,126,156

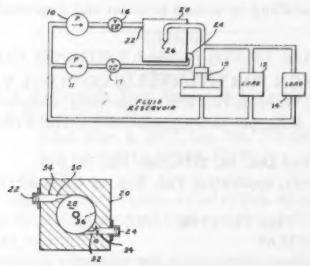
FLUID PULSATION AND TRANSIENT ATTENUATOR

Douglas R. Barnes, 1464 Hilltop Rd., Xenia, Ohio 45385

Filed Mar. 24, 1977, Ser. No. 780,955

Int. Cl.² F15C *1/16*

U.S. Cl. 137—810 **6 Claims**



1. A fluid system contraction and expansion wave attenuator: comprising means, including a cylindrical wall and two side walls, for forming a vortex chamber; at least one inlet means, for directing a flow of fluid into said vortex chamber tangential to the cylindrical wall; means for providing diode action in said inlet; said means for providing diode action including means for increasing the velocity flow into said vortex chamber; a vortex chamber outlet, in one of said side walls, coaxial with the cylindrical wall; an outlet conduit connected to said vortex chamber outlet; said outlet conduit including means for attenuating pulsations and transients in the fluid flow through the outlet conduit.

4,126,157

HIGH-PRESSURE FILAMENT REINFORCED HOSE HAVING INTEGRAL FILAMENT-BOUND COUPLINGS

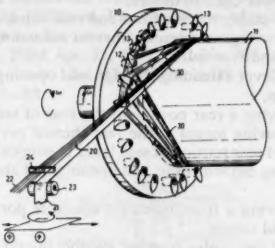
Jan I. R. Roest, Bergschenhoek, Netherlands, assignor to Vredestein N.V., The Hague, Netherlands

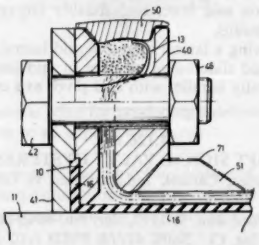
Filed Apr. 11, 1977, Ser. No. 786,213

Claims priority, application United Kingdom, Apr. 15, 1976, 15440/76

Int. Cl.² F16L *11/08*

U.S. Cl. 138—109 **7 Claims**





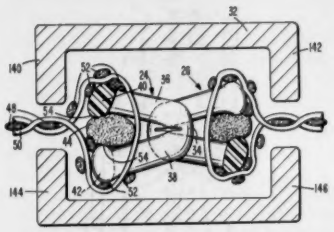
1. In a high pressure hose having a tubular body wall of rubbery material internally reinforced with windings of filamentary reinforcement, and a coupling member at each end for assembly in use, the improvement comprising, in combination, each coupling member having a portion projecting radially outwardly of said body wall; each winding being constituted by a plurality of continuous lengths, of said filamentary reinforcement, arranged side by side in laterally spaced relation to form a band-like grouping; each grouping extending helically, relative to the axis of said hose, through said body wall as a plurality of integrally continuous successive runs between said coupling members, with consecutive runs extending at equal but opposite angles with respect to said axis; means mechanically securing each grouping, at the reversal points between integrally continuous consecutive runs, to both coupling members at peripherally spaced coupling locations on said coupling members, which locations are spaced radially outwardly of the outer periphery of said body wall; and rubbery material clamping and sealing each grouping to both coupling members at said coupling locations.

4,126,158

SLIDE FASTENER STRINGER AND METHOD AND APPARATUS FOR MANUFACTURE

George W. Scott, Conneaut Lake, Pa., assignor to Textron Inc., Providence, R.I.

Filed Nov. 5, 1976, Ser. No. 739,091
Int. Cl.[2] A44B *19/12*
U.S. Cl. 139—384 B 18 Claims



1. A stringer for a slide fastener comprising

an elongated coupling element formed from a meandering continuous filament and having successive sections each including a head portion formed by flattening the filament, a pair of leg portions extending from opposite sides of the head portion in diverging directions to form a V-shaped configuration, and interconnecting portions joining the pair of leg portions to the respective opposite adjoining sections, said interconnecting portions alternately extending in a pair of diverging planes which intersect at the head portions and extend along the leg portions from the respective opposite sides of the head portions;

a cord extending between the leg portions of each pair of leg portions and between the alternating interconnecting portions to maintain the pairs of leg portions apart in the V-shaped configuration;

a woven tape having warp threads parallel to the coupling element and having an interwoven weft thread which passes around the cord and the alternating interconnecting portions to secure the coupling element to the tape;

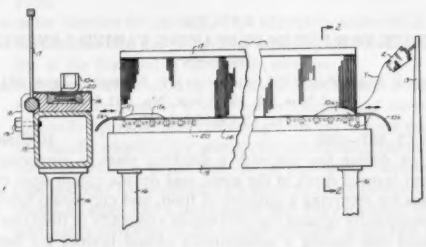
said interconnecting portions being flattened substantially perpendicular to the respective planes along which they extend, said flattened interconnecting portions engaging the cord to maintain the cord between the leg portions of each pair of leg portions.

4,126,159

APPARATUS AND METHOD FOR STABILIZING RAPIERS

Gerard A. Vercaemert, 421 Belmorrow Dr., Charlotte, N.C. 28214

Filed Sep. 29, 1977, Ser. No. 837,688
Int. Cl.[2] D03D *47/00*
U.S. Cl. 139—449 5 Claims



1. Apparatus for stabilizing the driving tapes of weft inserting rapiers on the race board of a shuttleless loom, during the return stroke from a position centrally of the race board to an original position outside the warpshed, comprising:

magnetic material carried by said rapiers,

magent means carried by said race board and extending from a point within the warp shed is a point adjacent each end thereof; and

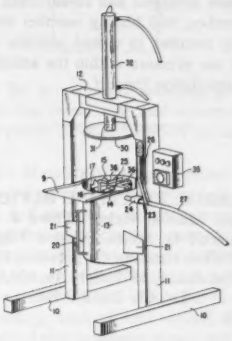
said magnet means extending along said race board in alignment with the path of the rapiers so as to exert a stabilizing force upon the tape during slowing when the rapiers and approaching said original position outside the warpshed.

4,126,160

CHEMICAL INDUCTOR AND CAN CRUSHER

Wendell Gurtler, Sheldon, Iowa 51201

Filed Jun. 13, 1977, Ser. No. 806,092
Int. Cl.[2] B65B *3/04;* B67B *7/24*
U.S. Cl. 141—91 7 Claims



1. A device for crushing and emptying a can comprising support means, a container supported by said support means, knife means on said container arranged to nearly surround an opening at the top of said container said opening being of such size that said knife means is adapted to engage the end of said can near its outer rim, and ram means on said support means positioned above said knife means whereby a can set upon said knife means will be pressed thereonto and crushed by said ram in which bracket means on said support means provides for pivotal mounting, pipe means being pivotally mounted in said bracket means and extending into the interior of said container, said pipe means having an end at right angles to the pivotal axis, said end being long enough such that pivotal motion of said pipe about its pivotal axis will carry the termination of said end to a point above said opening at the top of the container, said pipe being therefore in position to flush the interior of said can.

4,126,161

TIRE INFLATION DEVICE

Raymond L. Sterling, 4528 Pleasant Ave. S., Minneapolis, Minn. 55409

Filed Sep. 7, 1977, Ser. No. 831,167
Int. Cl.[2] B65B *3/04*
U.S. Cl. 141—95 9 Claims

1. A regulator device for the inflation of pneumatic tires and the like from an independent pressure source, such device including:

a. a body member having an inlet end and an outlet end, said inlet end being arranged to be connected to a source of air under pressure, said outlet end being arranged to be connected to an article to be filled with air;

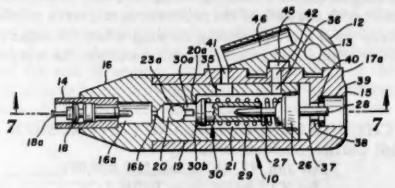
b. a first passage formed longitudinally, interiorally of said body member for communication of air from said inlet to said outlet end;

c. a second passage communicating with said inlet end and

arranged to discharge air under pressure from said body member;

d. a valving member arranged in said second passage and controlling the flow of air therethrough;

e. audible signal producing means arranged to receive air being discharged from said body member; and



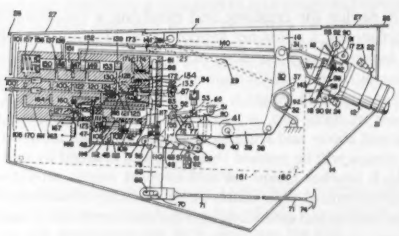
f. biasing means arranged and constructed to control said valving member, said biasing member normally holding said valving member in closed position and opening in response to the pressure within the article to be filled to prevent overinflation thereof.

4,126,162

AERIAL REFUELING DEVICE

Charles R. Clark, Mission Viejo; Richard J. Clark, Redondo Beach, and Gerald G. Steele, Mission Viejo, all of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jun. 6, 1977, Ser. No. 803,901
Int. Cl.[2] B65B *3/04*
U.S. Cl. 141—98 **36 Claims**



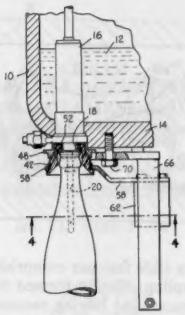
1. A device for opening a door on an airplane to expose a refueling receptacle having a hydraulically operated latch actuator connected to latches for engaging a fueling nozzle comprising a door hydraulic actuator having a rod connectable to the door for moving the door to open and closed positions and including a piston attached to the rod, first locking means movable from a release position to a position for locking the rod in a retracted position in which the door is closed, second locking means movable from a release position to a position for locking the rod in an extended position in which the door is open, a manual actuator movable to a first position in which it holds the second locking means in its release position and movable to a second position in which it holds the first locking means in its release position, first conduit means for directing flow of pressure fluid to one side of said piston for moving said rod to its extended position, second conduit means for directing flow of pressure fluid to the other side of the piston for moving the rod to its retracted position, a first valve controlling flow of fluid through said second conduit means, means to hold the first valve in a position to close said second conduit means when the manual actuator is in its first position, and a second valve for controlling flow of pressure fluid to and from said latch actuator.

4,126,163

CENTERING DEVICE FOR BOTTLE FILLING MACHINES

Thomas P. Hartness, 305 Bridgewater Dr., and Robert G. Hartness, 203 Wilmington Rd., both of Greenville, S.C. 29607

Filed Feb. 17, 1977, Ser. No. 769,581
Int. Cl.[2] B67C *3/26*
U.S. Cl. 141—269 **9 Claims**



1. A bottle centering and sealing device for use on a bottle filling machine provided with a filler tank, wherein a filler valve is carried in a bottom wall of said tank with a vent tube projecting vertically below said bottom wall of said tank, and wherein a platform is positioned below said filler valve which is elevated for vertically raising a bottle carried thereon to a filling position for being filled with liquid flowing through said filler valve from said tank, said bottle centering device comprising:

(a) a centering cup having a housing with a recess provided therein for receiving a top of a bottle when elevated on said platform;

(b) said recess having a conical shaped portion adjacent the bottom of said housing which terminates in a cylindrical upper portion, said conical shaped portion being inclined inwardly from the bottom of said housing towards the top of said housing;

(c) sealing means carried in said housing providing a seal between the top of said bottle and said tank when said bottle is in a filling position;

(d) a horizontally extending arm having one end supporting said centering cup;

(e) a vertically extending guide bracket;

(f) bearing means interposed between said vertically extending guide bracket and the other end of said arm permitting said centering cup and said horizontally extending arm to be raised in a direct vertical line by said bottle as said bottle is raised on said platform to a filling position;

whereby said bottle is aligned with said filler valve by said centering cup as the bottle is raised to said filling position.

4,126,164

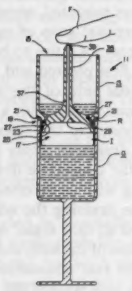
DEVICE FOR USE IN PREPARING VARIED LAYERED DRINKS

James S. Magnifico, 2951 Southwide Dr., Memphis, Tenn. 38118

Filed Nov. 14, 1977, Ser. No. 851,456
Int. Cl.[2] B65B *3/04*
U.S. Cl. 141—286 **10 Claims**

1. A device for use with a drinking glass in preparing a varied layered drink in the glass, said device comprising: cup means for receiving a quantity of fluid, said cup means having a substantially opened top into which a quantity of fluid can be poured and having a substantially closed bottom for being positioned substantially centrally over the glass, said cup means including a portion for resting on the upper rim of the glass so as to form a substantially air-tight seal between said

cup means and the glass, said bottom of said cup means having at least one aperture therethrough for defining a fluid passageway for allowing fluid to flow from said cup means into the glass and having an aperture therethrough for defining an air vent for allowing air to pass from the glass when fluid is flowing into the glass through said fluid passageway, said fluid passageway being angled downward and outward for directing any fluid flowing therethrough against the inner wall of the glass, said air vent being located remote from said fluid passageway for preventing the air passing through said air vent from agitating the fluid flowing through said fluid passageway.

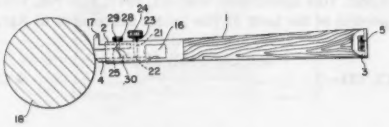


4,126,165

WOOD LATHE CHISEL

Gelas S. Guignard, and Joseph E. Bertin, both of Scotsfield Dr., Callander, Ontario, Canada (P0H 1H0)

Filed Oct. 14, 1977, Ser. No. 842,067
Int. Cl.[2] B23B *27/00*
U.S. Cl. 142—56 **4 Claims**



1. A wood lathe chisel, comprising

a handle member having spaced opposite first and second ends;

a cutter member for cutting wood adjustably mounted in the handle member and extending beyond said handle member at the first end of the handle member;

cutter positioning means in the handle member and coupled to the cutter member in the handle member and having a manually operable part extending from the second end of the handle member for selectively positioning the cutter member relative to the first end of said handle member;

a gage member for maintaining a selected space between the cutter member and a workpiece, said gage member being adjustably mounted in the handle member at the first end thereof; and

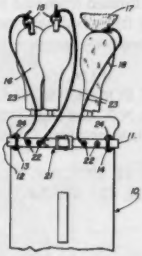
diverting means in the handle member for diverting wood particles cut from a workpiece by the cutter member to a side of said handle member.

4,126,166

SECURING APPARATUS FOR GOLF HEAD COVERS

George Hohenstein, 44 Meditation Way, Saratoga Springs, N.Y. 12866

Filed Aug. 10, 1977, Ser. No. 823,410
Int. Cl.[2] A63B *55/00, 57/00*
U.S. Cl. 150—1.5 R **10 Claims**



1. Apparatus for protectively securing golf head covers having extension ring means atop said covers comprising:

at least two separate flexible members having first and second ends;

a strap having a plurality of means disposed in substantially uniform spaced relation for receiving and securing said first ends to said strap on a golf bag, one and only one of said first ends being attached to each of said plurality of means and positionally restricting said first end;

the remainder of each of said flexible members being positionally unrestricted by said means for securing; and

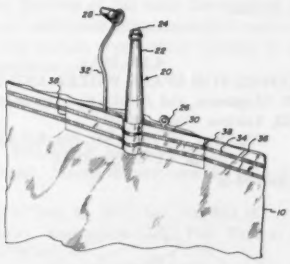
means for attaching each of said second ends to a corresponding one of said extension means atop said covers.

4,126,167

GASTRIC TUBE DRAINAGE BAG

J. Weston Smith, St. Cloud, and David J. Gottwalt, Rush City, both of Minn., assignors to Patient Care Products, Inc., Burnsville, Minn.

Filed Dec. 6, 1976, Ser. No. 747,498
Int. Cl.[2] B65D *33/16*
U.S. Cl. 150—8 **2 Claims**



1. A sealable plastic bag formed from two pieces of similar plastic material of substantially dissimilar thicknesses by the application of a heating and bonding process, comprising:

(a) a nozzle assembly having an extended centrally positioned tapered nozzle opening and a passage extending from said nozzle opening through a base member, said base member having a center thick portion and tapered ends which diminish linearly from said thick portion to a predetermined thickness;

(b) a plastic bag of wall thickness substantially equal to said tapered end predetermined thickness, said bag attached to said nozzle assembly base along its edge and by a heat

sealing process which bonds adjacent plastic materials together;

(c) an elongated stem integrally formed from said nozzle assembly material and having a length exceeding that of said extended tapered nozzle opening, and a cap on the end thereof, also integrally formed from said nozzle assembly material and sized for closure fitting over said nozzle opening; and

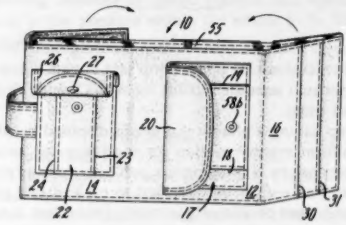
(d) a loop integrally formed from said nozzle assembly material and extending from said base member.

4,126,168

MULTI-PURPOSE POCKET-SIZE CARRYING CASE

Joseph Ganz, Fairlawn, N.J., and Burt J. Siris, New York, N.Y., assignors to Sirco International Corporation, Westchester, N.Y.

Filed Oct. 31, 1977, Ser. No. 846,839
Int. Cl.[2] A45C 1/06
U.S. Cl. 150—35 **10 Claims**



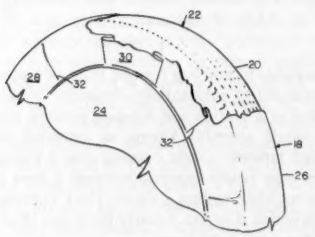
1. A pocket-size carrying case comprising: a case center section, and two case end sections integral with said center section at opposite ends thereof and both being foldable so as to lie over said center section to define the folded condition of the carrying case in which all sections are folded one over another; said center and end sections jointly forming opposed exterior and interior longitudinal case sides defining therebetween a paper money compartment for storing paper money and the like; means defining a key compartment on the exterior side of one of said end sections for storing keys; means defining an expandable compartment on the exterior side of said center section; and means defining credit card compartments on the exterior side of the other of said end sections for storing credit cards and the like.

4,126,169

COVER FOR SPARE WHEEL AND TIRE

Howard W. Magnuson, and Juanita C. Magnuson, both of P.O. Box 3052, Yakima, Wash. 98903

Filed Sep. 28, 1977, Ser. No. 837,432
Int. Cl.[2] B65D 85/06
U.S. Cl. 150—54 B **1 Claim**



1. A vehicle spare wheel and tire cover with one size of this tire cover to fit many sizes of spare wheels and tires, having multiple drainable pleats throughout the circumference and drain holes at the bottom, and a draw cord at the rear, all arranged to cover many sizes of vehicle spare wheel and tire combinations, which are carried on the exteriors of vehicles to thereby protect the tires and enhance the overall appearance of the vehicles, comprising:

(a) a center circular panel smaller in diameter than the smallest face of any side wall of a tire to be covered among several sizes of tires mounted on wheels;

(b) a wide circumferential strip of material to fit over the curved circumference of a tire to be covered among several sizes of tires, first pleated and then joined along one front circumferential side of the material to the center circular panel, commencing with a drainable box pleat at the top to drain water to the respective sides, and then including several drainable pleats around the circumference to continue the respective drainage of water downwardly, and ending with an inverted drainable pleat at the bottom to continue draining the water, whereby all these pleats are arranged so rain water will drain downwardly outside on both sides of the strip and over the center panel of material, and the rear circumferential side of material, covering the other side wall of the tire, having a continuous hollow infold terminating at the bottom with a closable ga.;

(c) a draw cord inserted throughout the continuous hollow infold of the rear circumferential side of material with the ends of the draw cord extending out from this infold before reaching the gap for tieing across the closable gap, so this vehicle spare wheel and tire cover is snugly fitted to one selected set of a large number of different sizes of these sets of mounted vehicle spare wheel and tire combinations in turn mounted on the exteriors of vehicles;

(d) grommets installed in the bottom of the wide circumferential strip to create drain holes; and

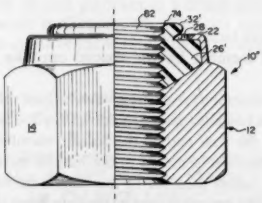
(e) grommets installed in the rear circumferential side of the material before the termination of the continuous hollow infold at the closable gap, through which the draw cord ends are passed to be later pulled together and tied to close the gap and hold the tire cover on the wheel.

4,126,170

SEALING NUT WITH PREFORMED TURTLENECK INSERT

Lon DeHaitre, Arlington Heights, Ill., assignor to Abbott Screw and Manufacturing Co., Chicago, Ill.

Continuation-in-part of Ser. No. 584,922, Jun. 9, 1975, Pat. No. 4,019,550. This application Mar. 11, 1977, Ser. No. 776,864
The portion of the term of this patent subsequent to Apr. 26, 1994, has been disclaimed.
Int. Cl.[2] F16B 39/34
U.S. Cl. 151—7 **4 Claims**



1. An improved reuseable sealing nut which is adapted to be screwed onto a male threaded stud or the like and brought into axial end engagement with the bearing surface of a body through which the stud threadedly extends in order to seal the joint defined by the stud and body and to lock the nut onto the stud while the joint is so sealed, the nut including; a nut body of metal having a central independently fabricated insert of a relatively stiff, high durometer polyamide resin arranged coaxially therewith and at one end thereof, the body and insert

being locked together and there being a continuous threaded bore in the nut with a portion of the bore being in the body and a portion of the bore being in the insert, the insert having a shoulder at an axial end thereof and the body having an integral, generally cylindrical wall terminating at said one end in an angular radially inwardly bent over lip engaging the shoulder to provide for said locking of said insert, said insert additionally having an axially extending, integral relatively thin crown adjacent the insert bore and having at least a portion of said threaded bore on the inner surface of said crown which is spaced radially inward from the lip to provide an annular axially facing gallery between lip and crown, the lip being the limit to which the nut body extends axially at said one end, the axial length of the crown before the nut has been used being such that the free end thereof is spaced substantially beyond the lip in an axial direction away from the nut body; the improvement comprising:

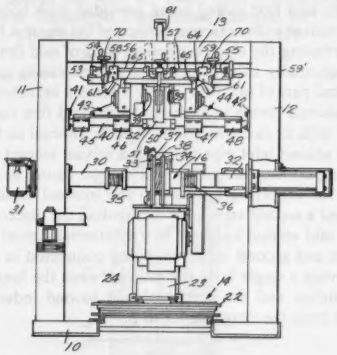
the crown being angled in a radially outward direction to form a preformed turtle-neck-like fold, the crown being inverted in a radially outward direction when pressed axially against a bearing surface by screwing said nut toward said surface bringing a substantial portion of the crown end into the gallery to occupy substantially all of said gallery.

4,126,171

TIRE SHOULDER TRIMMING DEVICE

Billy L. Sorenson, Muscatine, Iowa, assignor to Bandag Incorporated, Muscatine, Iowa

Filed Sep. 20, 1976, Ser. No. 724,764
Int. Cl.[2] B29H *21/08*
U.S. Cl. 157—13 **14 Claims**



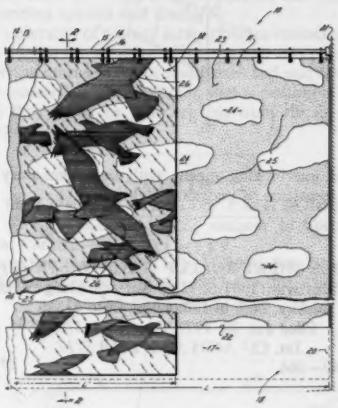
1. An apparatus for rasping the shoulders on the opposite sides of the crown on a tire carcass being prepared for recapping, comprising a frame, means on said frame for rotatably supporting a tire carcass with its rasped crown centered at a rasping station where said shoulders are to be rasped to have a desired shape relative to said crown, feeler means for engaging against the rasped crown, support means on said frame for said feeler means a pair of separate rotatably driven shoulder rasping means mounted on said support means and being adapted to be moved thereon in controlled paths while engaging respectively against said shoulders on the opposite sides of said crown, means responsive to the engagement of said feeler on said crown to drive each of said shoulder rasping means to move on said support, and guide means on said support means for cooperating with said shoulder rasping means, said guide means coacting with said rasping means as they move on said support to control the direction of movement of said rasping means as the separate rasping means move in said paths over said shoulders and relative to said feeler means.

4,126,172

SHOWER CURTAIN

Raymond F. Faragher, Jr., Kenton Hills, Ky., assignor to Saturday Knight Ltd., Cincinnati, Ohio

Filed Sep. 26, 1977, Ser. No. 836,579
Int. Cl.[2] A47H *1/00*
U.S. Cl. 160—126 **3 Claims**



1. A three-dimensional shower curtain structure comprising the combination of:

an opaque inner shower curtain having an inner side and an outer side, and a pattern on said outer side;

an outer shower curtain having transparent portions and pattern portions;

said curtains being mounted in relation to a tub such that said inner curtain is hung above said tub, a lower portion thereof extending into said tub proximate one side of a tub sidewall, and such that said outer curtain is hung substantially parallel to said inner curtain and has a lower portion proximate an opposite side of said tube sidewall;

at least said lower portions of said inner and outer curtains being spaced apart a distance at least equal to said tub sidewall;

said pattern on said inner curtain being visible through said transparent portions of said outer curtain; and

said pattern on said inner curtain and said pattern portions on said outer curtain cooperating together to produce a three-dimensional effect.

4,126,173

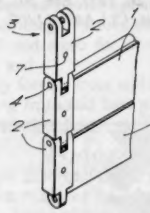
SHUTTER ARRANGEMENT

Ernst Theuerkauff, Mergenthalerstrasse 8, 3014 Laatzen 1, Germany

Filed Dec. 20, 1977, Ser. No. 862,757
Claims Priority, Application [DE] Fed. Rep. of Germany, Feb. 2, 1977, 2704346
Int. Cl.[2] E06B *9/24*
U.S. Cl. 160—229 R **13 Claims**

1. A shutter arrangement comprising: profiled plastic strips having adjacent sides; interlocking means with complementary means on said adjacent side of said profiled strips; armored chain links; adjacent profiled strips being mounted pivotably relative to one another on said links; said profiled strips being of transparent plastics with all surfaces being completely polished, and having narrow sides with at least one projection; said links having opening means complementary to said projection; said projection being insertable and fastenable in said complementary opening means, said transparent plastics with all surfaces completely polished preventing undesired reflec-

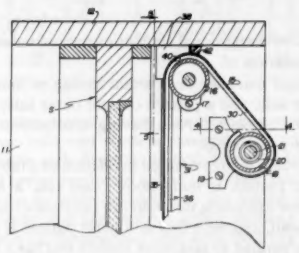
tions and refractions of incident light for providing substantially uniform optically homogeneous viewing free of disturbances, said interlocking means with complementary means inhibiting formation of undesired light gaps



4,126,174
FLEXIBLE SHEET ROLLUP WINDOW STRUCTURE

James P. Moriarty, 1007 S. High St., and Craig N. Birhanzl, 131½ E. Deshier, both of Columbus, Ohio 43206

Filed Jul. 20, 1977, Ser. No. 817,165
Int. Cl.[2] A47H *3/00*; E06B *9/17*
U.S. Cl. 160—266 17 Claims



1. The combination of a window frame having spaced apart, longitudinally extending side members and first and second end members extending transversely between said side members in longitudinally spaced relationship thereby defining a window opening:

a rollup window structure for interpositioning in the window frame comprising

a guide roller supported by and extending transversely across the window frame closely adjacent the first end member thereof,

a storage roller supported by and extending transversely across the window frame in spaced parallel relationship to said guide roller,

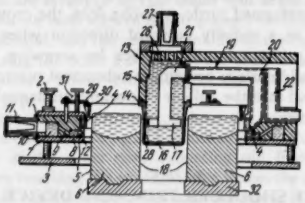
an elongated, thin sheet having longitudinal edges and formed from an air impervious flexible material secured at one end to said storage roller and adapted to be selectively rolled up thereon or unrolled, trained around said guide roller and extended across the window frame in closing relationship to the window opening, said sheet being provided with a longitudinally extending flat surfaced rib of predetermined width continuously secured throughout its length along each marginal edge portion thereof in parallel relationship to a respective edge and projecting in upstanding relationship to a surface of said sheet so as to be interposed between said sheet and said guide roller, said sheet carrying a transversely extending weather strip at a position to engage the first end member of the window frame in fluid sealing relationship therewith when said sheet is fully extended, and a rigid structural member attached to an opposite end of said sheet in transversely disposed relationship and displaceable longitudinally with said sheet either into or out of sealing engagement with the second end member of the window frame, and

longitudinally extending edge seal guides disposed at and mounted on each vertical side member of the window frame and cooperatively engaging with a respective longitudinal marginal edge portions of said sheet and associated rib in sealing relationship therewith.

4,126,175
ELECTROMAGNETIC MOULD FOR THE CONTINUOUS AND SEMICONTINUOUS CASTING OF HOLLOW INGOTS

Zinovy N. Getselev, Prospekt Metallurgov, 73, kv.29., Kuibyshev, U.S.S.R.

Filed Feb. 14, 1977, Ser. No. 768,350
Int. Cl.[2] B22D *11/01*
U.S. Cl. 164—147 7 Claims



1. An electromagnetic mould for the continuous and semicontinuous casting of ingots, comprising: a first casing; a first inductor rigidly secured on said first casing for shaping with its electromagnetic field the external surface of an ingot; a first inlet pipe connected to said first casing for delivering coolant thereinto, said first casing being provided with holes for supplying coolant to the external surface of the ingot; a first screen for distributing the electromagnetic field of said first inductor in a substantially axial direction; a second casing mounted in the central part of said first casing; a second inductor mounted in said second casing in alignment with said first inductor for shaping with its electromagnetic field an internal surface of the ingot; a second inlet pipe connected to said second casing for delivering coolant thereinto, said second casing having holes therein for supplying coolant to the internal surface of the ingot; and a second screen for distributing the electromagnetic field of said second inductor in a substantially axial direction, said first and second inductors being connected in series and each having a single turn, the ratio between the height of said first inductor and the height of said second inductor being selected from the range of 1.2 to 3.

4,126,176
FOUNDRY MOLDING MACHINE FOR BOX MOLDS

Günter Müller, Karlsruhe, and Gerhard Blankenhorn, Friedrichstal, both of Fed. Rep. of Germany, assignors to Badische Maschinenfabrik GmbH, Fed. Rep. of Germany

Filed Jan. 26, 1977, Ser. No. 762,519
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1976, 7602966[U]
Int. Cl.[2] B22C *11/00, 15/22*
U.S. Cl. 164—160 7 Claims

1. A foundry molding machine of the shot-type for producing box molds and comprising:

a molding box having two open ends;

injection apparatus having compressed air means and a filling vessel means for shooting the molding box with molding sand and precompacting the sand;

a pressure plate carried by the filling vessel means of the injection apparatus;

a pattern plate carrier means for closing one open end of the molding box during filling and compaction;

a filling frame means for resting against the other open end of the molding box during filling and compaction;

a closed annular passage means, defined within the filling frame means by internal walls of said filling frame means, for allowing the escape of spent air and for accumulating escaped sand;

press apparatus means, which is disposed underneath the pattern plate carrier means, for acting through the pattern

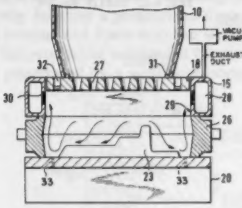


plate carrier means and against the pressure plate to consolidate the sand; and

venting aperture means, located on an inner wall of the filling frame, for allowing the escape of spent air from the molding box into the annular passage means;

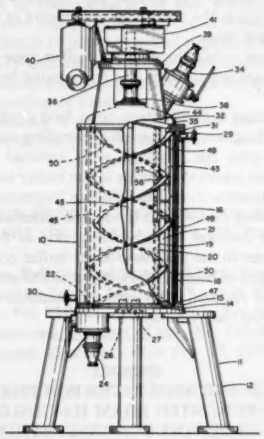
whereby spent air can escape from the molding box through the venting aperture means and the annular passage means with only short-lived and less noise nuisance.

4,126,177

DUAL SCRAPED SURFACE HEAT EXCHANGER

Robert L. Smith, and Carl C. Yann, both of Louisville, Ky., assignors to Chemetron Corporation, Chicago, Ill.

Filed Mar. 10, 1977, Ser. No. 776,137
Int. Cl.[2] F28D *11/02*
U.S. Cl. 165—91 **10 Claims**



1. A heat exchanger comprising:

(a) a drum having an inlet and an outlet for material to be moved therethrough;

(b) a first jacket for a heat exchange medium mounted on said drum and substantially surrounding the outside of said drum;

(c) a pipe mounted within said drum and coaxial therewith;

(d) a second jacket for a heat exchange medium mounted on said pipe and substantially extending around the inside of said pipe, said pipe and said drum defining an elongated annulus therebetween for the passage therethrough of the material;

(e) means rotatably mounted in said annulus for moving the material toward said inlet against the material flow therefrom, said means comprising:

(1) a pair of opposed spiral ribs, one rib being located adjacent said drum and extending toward said pipe and the other rib being located adjacent said pipe and extending toward said drum;

(2) a plurality of pairs of scraper blades extending between said ribs for scraping said drum and said pipe; and

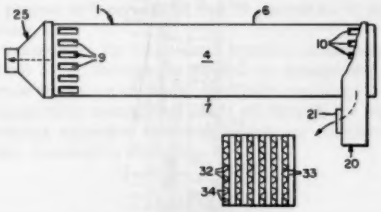
(f) driving means to rotate said means and said ribs to move the material toward said inlet with a portion of the material flow from the inlet moving from rib to rib to the outlet.

4,126,178

MULTIPLE FLUID FLOW PATH BODIES

Everett F. Kelm, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 660,879, Feb. 24, 1976, Pat. No. 4,041,592.
This application Mar. 23, 1977, Ser. No. 780,471
Int. Cl.[2] F28D *17/00*
U.S. Cl. 165—165 **3 Claims**



1. A triple fluid flow path body comprising

(a) a monolithic, honeycombed body having a matrix of thin walls forming a multiplicity of substantially parallel cells extending therethrough between opposed face ends of the honeycombed body and being bounded on sides generally parallel to cell axes by opposed upper and lower boundary surfaces and opposed first and second side boundary surfaces connecting upper and lower boundary surfaces,

(i) the cells being grouped into a plurality of columns of cells, each column being separated from adjacent columns of cells by a vertical fluid barrier wall surfaces extending continuously from the upper boundary surface to the lower boundary surface and from one face end to the other face end,

(ii) selected columns of cells being closed against fluid passage on both face ends and opposite ends of cells thereof being spaced from the adjacent closed face ends thereof, the spaces in those columns between those ends of cells and the adjacent closed face ends constituting fluid flow conduits communicating with the cells in those columns, while unselected columns of cells are open-ended to form separate first fluid flow paths,

(iii) the honeycombed body further having openings in the upper and lower boundary surfaces, near the face ends communicating with the fluid flow conduits adjacent respective face ends, thereby providing in the body fluid flow paths through the boundary surface openings and the fluid flow conduits to cells in the selected columns of cells near the one face, through the cells, and from the cells in the selected columns of cells through the fluid flow conduits and the boundary surface openings near the other face end, and

(iv) the body having a lateral fluid barrier surface extending between opposed face ends and opposed side boundary surfaces intermediate of and generally parallel to

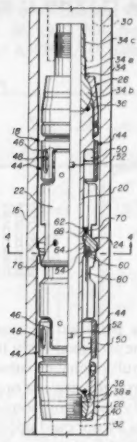
the upper and lower boundary surfaces, which lateral surface divides the body into upper and lower portions that respectively have separate upper U-shaped second and lower inverted U-shaped third fluid flow paths through the selected columns.

4,126,179

LOCATING SYSTEM

Olen R. Long, Celina, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jun. 10, 1977, Ser. No. 805,294
Int. Cl.[2] E21B *33/129*
U.S. Cl. 166—64 **17 Claims**



1. A locating device for locating one and only one of a plurality of identical locating nipples in a well tubing string and thereby locating a well tool in the tubing string, the locating device comprising:

a tool mandrel;

locator key means having an outer configuration adapted to mate with a matching recess of a plurality of locating nipples in the tubing string and once so mated halting further movement of the locating device in one direction through the tubing string;

means for mounting said locator key means on said tool mandrel and for permitting radial movement of said locator key means with respect to said tool mandrel;

means for resiliently biasing said locator key means radially outwardly;

actuator means carried on said tool mandrel for rendering said means for resiliently biasing ineffective until engagement with a coacting selective activating means in the tubing string; and

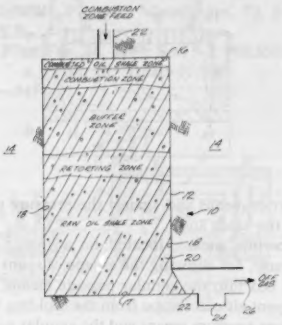
wherein while said resilient biasing means is rendered ineffective, said locator key means may pass through any of said locating nipples without engagement therewith and once said resilient biasing means is rendered effective said locator key means mates with the next locating nipple having a matching recess upon continued movement of the locating device in said one direction.

4,126,180

METHOD OF ENHANCING YIELD FROM AN IN SITU OIL SHALE RETORT

Chang Y. Cha, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Continuation-in-part of Ser. No. 714,345, Aug. 16, 1976, abandoned, which is a continuation of Ser. No. 634,430, Nov. 24, 1975, abandoned, which is a continuation of Ser. No. 492,290, Jul. 26, 1974, abandoned. This application Jun. 13, 1977, Ser. No. 805,975
Int. Cl.[2] E21B *43/24*
U.S. Cl. 166—261 **29 Claims**



1. A method for recovering liquid and gaseous products from an in situ oil shale retort in a subterranean formation containing oil shale, said in situ retort containing a fragmented permeable mass of formation particles containing oil shale, comprising the steps of:

(a) establishing a buffer zone of hot retorted oil shale containing residual carbonaceous material in the fragmented permeable mass by passing through at least a portion of the fragmented permeable mass a hot processing gas substantially free of free oxygen and having a temperature at least as high as the retorting temperature of oil shale in the fragmented mass;

(b) thereafter establishing in the buffer zone a combustion zone advancing through the fragmented permeable mass; and

(c) introducing a combustion zone feed containing oxygen into the fragmented mass on the trailing side of the combustion zone for reaction with residual carbonaceous material in retorted oil shale in the buffer zone to advance the combustion zone through the fragmented means and for retorting oil shale to liquid and gaseous products in a retorting zone on the advancing side of the combustion zone, wherein the thickness of the buffer zone is sufficient for reaction of most of the oxygen in the combustion zone feed with residual carbonaceous material in retorted oil shale in the buffer zone.

4,126,181

METHOD AND APPARATUS FOR FORMATION FRACTURING WITH FOAM HAVING GREATER PROPPANT CONCENTRATION

Donald S. Black, Edmonton, Canada, assignor to Palmer Engineering Company Ltd., Edmonton, Canada

Filed Jun. 20, 1977, Ser. No. 808,276
Int. Cl.[2] E21B *43/26*
U.S. Cl. 166—280 **18 Claims**

1. A method of treating a subsurface earth formation penetrated by a well bore with a foam comprising the steps of:

blending a proppant with a foamable carrier thereby forming a slurry;

pressurizing the slurry to a desired pressure;

introducing the pressurized slurry into a centrifugal separa-

tor which can separate out some of the carrier thereby concentrating the amount of proppant per volume of slurry;

removing an amount of the carrier from the separator per volume of slurry until the desired proppant concentration is obtained in the concentrated slurry;

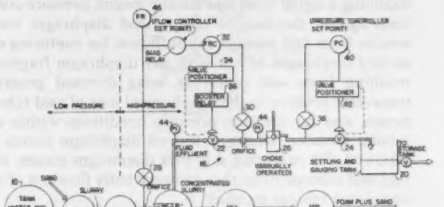
discharging the concentrated slurry from the separator;

adding a surfactant to the slurry either prior to or after pressurizing said slurry and at a stage prior to the formation of foam;

adding a pressurized gas to the discharged concentrated slurry, thereby forming a pressurized foam; and

injecting said pressurized foam into the well bore.

17. A system for producing a foam for treating a subsurface earth formation penetrated by a well bore comprising:



means for blending a proppant with a foamable carrier which comprises a liquid, thereby forming a slurry;

means connected to said blending means for pressurizing the slurry to a pressure that is great enough for introduction into the well bore;

a centrifugal, mechanical separator of the type that can concentrate the amount of proppant in the carrier by removing some of the liquid, the intake of said separator connected to the discharge of said pressurizing means, said separator removing an amount of substantially proppant free liquid to get the desired proppant concentration in the slurry and discharging the concentrated slurry;

means for adding a surfactant to the mixture at a stage prior to the formation of foam; and

means for adding a pressurized gas to the concentrated slurry to form the pressurized foam.

4,126,182

METHOD FOR DECREASING RESISTANCE TO FLOW OF CRUDE OIL UP FROM A WELL OR THROUGH A PIPELINE

Joseph C. Allen, Bellaire, and Sze-Foo Chien, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 714,946, Aug. 16, 1976, Pat. No. 4,100,967, which is a continuation-in-part of Ser. No. 535,896, Dec. 23, 1974, abandoned. This application Feb. 27, 1978, Ser. No. 881,226

Int. Cl.[2] **E21B** *43/00;* **F17D** *1/16*

U.S. Cl. 166—314 **6 Claims**

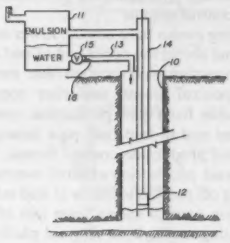
1. A method for flowing crude oil at temperatures above 32° F. from the bottom of a well to the surface with decreased resistance to flow comprising,

(a) mixing only water with the crude oil at temperatures above 32° F. in the bottom of the well until an emulsion consisting of water and oil passes the inversion point where the emulsion transforms from a water-in-oil emulsion to a lower viscosity oil-in-water emulsion that contains, by volume, about 5 percent to 9 percent oil and 95 percent to 91 percent water, and

(b) flowing the oil-in-water emulsion to the surface for producing more crude oil with less energy from a well than for producing unemulsified crude oil from the well utilizing expensive chemicals which are prohibitive in costs, practicality, and safety.

4. A method for transporting crude oil at temperatures above 32° F. through a pipeline with decreased resistance to flow comprising,

(a) mixing only water with the crude oil until the emulsion consisting of water and oil passes through the inversion point where the emulsion changes from a water-in-oil



emulsion to a lower viscosity oil-in-water emulsion at temperatures above 32° F. that contains, by volume, about 5 percent to 9 percent oil and 95 percent to 91 percent water, and

(b) transporting the oil-in-water emulsion at temperatures about 32° F. through the pipeline for transporting more crude oil more economically and with less energy than for transporting unemulsified crude oil through the pipeline utilizing expensive chemicals which are prohibitive in cost, practicality, and safety.

4,126,183

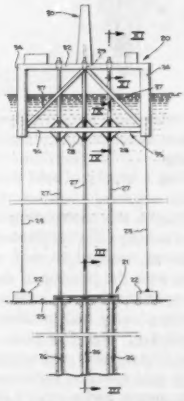
OFFSHORE WELL APPARATUS WITH A PROTECTED PRODUCTION SYSTEM

Raymond W. Walker, Huntington Beach, Calif., assignor to Deep Oil Technology, Inc., Long Beach, Calif.

Filed Dec. 9, 1976, Ser. No. 749,159

Int. Cl.[2] **E21B** *7/12*

U.S. Cl. 166—338 **33 Claims**



1. In a production control system for offshore well apparatus including a platform means and a well template means on a seabed formation beneath the platform means, the combination of:

well casing means supported from said template means and extending into a well hole in the seabed formation for a selected depth;

a riser pipe means extending downwardly from said platform means through said well template means into said well casing means to a selected depth within the depth of the well casing means;

a production fluid control means in said well casing means;

fluid pressure actuating means on said platform for said production fluid control means;

control line means interconnecting said fluid pressure actuating means and said production fluid control means;

a tubing string in fluid communication with said production control means and with said riser pipe means through said production control means;

a riser connecting means between the lower end of said riser pipe means and above the upper end of said control means, and interconnecting said control line means with said production control means, said riser connecting means being releasable from said production control means to free the lower end of said riser pipe means from its connection to said production control means;

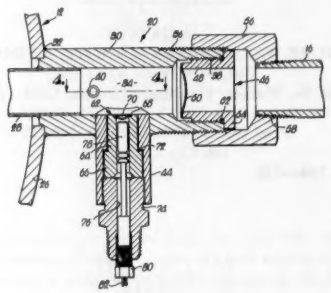
and means at said production control means for automatically shutting off production flow at said selected depth of the production control means upon loss of fluid pressure in said actuating means between said platform means and said production control means.

4,126,184

INSTANTANEOUS RELEASE, DUAL VALVE FOR FIRE SUPPRESSION APPARATUS

James O. Hinrichs, Odessa, Mo., assignor to Fike Metal Products Corporation, Blue Springs, Mo.

Filed Nov. 26, 1976, Ser. No. 745,003
Int. Cl.[2] A62C *35/08*
U.S. Cl. 169—56 **11 Claims**



1. Apparatus for releasing a hazard-suppressing substance in response to conditions indicating the presence of a hazard, said apparatus comprising:

a vessel for holding a supply of said substance under pressure;

a substantially straight, substance-coveying tubular member which defines a substantially unobstructed substance-conveying passageway secured to said vessel and in open communication with the interior of the latter, said member having an aperture through a sidewall thereof;

means for normally closing said member against fluid flow therefrom, including first frangible diaphragm means disposed across said member and in spaced relationship to said vessel with said aperture between the latter and the first diaphragm means, and a second frangible diaphgram means located adjacent said aperture,

said first diaphragm means being the sole flow-blocking member disposed across said member and being operable for rupturing upon experiencing a significant increase in pressure within said tubular member,

said second diaphgram means being operable for rupturing upon experiencing a significant increase in pressure directed against the face thereof remote from said passageway;

a supply of said hazard-suppressing substance under pressure and located within said vessel and tubular member and bearing directly against said first and second frangible diaphragm members;

rupture means adapted for connection to sensing means operable to sense the existence of hazard-indicating conditions;

structure removably mounting said rupture means completely outside of said tubular member and adjacent said second diaphragm means for allowing replacement of said rupture means without draining of said vessel and tubular member of said substance or altering the pressure conditions within the same,

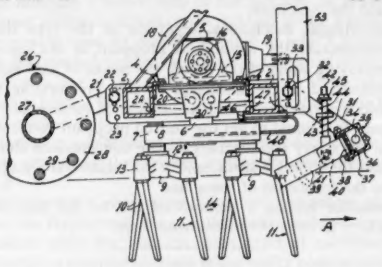
said rupture means including structure for creating, upon receiving a signal from said sensing means, pressure conditions against the face of said second diaphragm means remote from said passageway sufficient for rupturing said second diaphragm means with any diaphragm fragments resulting from said rupturing being directed generally transverse relative to the longitudinal axis of said tubular means, and for creating pressure conditions within said tubular member, after said second diaphragm means has ruptured, for rupturing said first diaphragm means, such that said substance can then unrestrictedly flow out of said vessel and tubular member.

4,126,185

SOIL CULTIVATING IMPLEMENT

Cornelis van der Lely, 7, Brüschenrain, ZUG, Switzerland

Filed Sep. 13, 1976, Ser. No. 722,511
Claims priority, application Netherlands, Sep. 12, 1975, 7510741; May 3, 1976, 7604670
Int. Cl.[2] A01B *33/06*
U.S. Cl. 172—59 **11 Claims**



1. A soil cultivating implement comprising a frame and a plurality of rotatable soil cultivating members arranged in a transverse row with respect to the normal direction of travel, said members being journalled along the length of an elongated portion of said frame and said frame portion also extending transverse to the direction of travel, said cultivating members being mounted on corresponding upwardly extending shafts and driving means connected to rotate those members about axes defined by said shafts, each cultivating member comprising a substantially horizontal support and spaced apart groups of tines being mounted on said support so as to be freely rotatable about corresponding upwardly extending axes, the paths of soil worked by the tines of two neighboring cultivating members exceeding the distance between the respective axes of rotation of said cultivating members, at least one soil crumbling member mounted on the implement and said crumbling member having a generally horizontal resilient active portion located substantially midway between said two neighboring cultivating members, said active portion being located above said groups and adjacent the supports of said neighboring members, the active portions of the crumbling members extending rearwardly of a plane that passes through the foremost paths of said tine groups.

4,126,186

SOIL CULTIVATING IMPLEMENTS

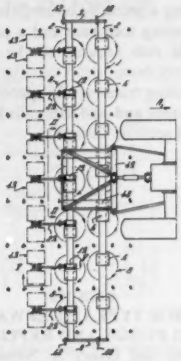
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Aug. 10, 1976, Ser. No. 713,107

Claims priority, application Netherlands, Aug. 15, 1975, 7509737

Int. Cl.[2] A01B *21/06, 39/08*

U.S. Cl. 172—169 **15 Claims**



1. A soil cultivating implement comprising a frame and a plurality of soil working cultivating members mounted adjacent one another on said frame, said cultivating members being rotatable about corresponding upwardly extending axes and being spaced apart to work on both sides of a row of plants, at least one crumbler-roller connected to said frame and positioned at the rear of said members to engage soil worked by the cultivating members between the rows of plants, said roller being rotatable about an axis extending transverse to the direction of travel and having adjusting means that is settable to expand and contract the working width of that roller in that direction, said roller comprising two supports and said supports mounting respective elongated elements that form a ground engaging periphery of said roller, at least one of said supports being displaceable along the rotary axis of said crumbler-roller to expand and contract said working width, said one support being mounted on a shaft and the other support being mounted on a tube, said shaft being slideable in said tube.

4,126,187

REARFOLDING IMPLEMENT

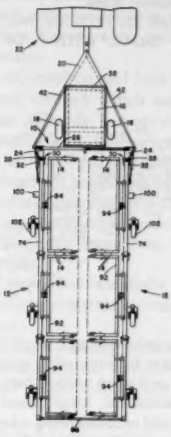
Lester D. Schreiner, and Ronald M. Steilen, both of Ankeny, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jan. 18, 1977, Ser. No. 760,383

Int. Cl.[2] A01B *73/00*

U.S. Cl. 172—311 **17 Claims**

1. In a foldable agricultural implement having a transverse main section and at least one tool carrying outer section, the improvement comprising: a member supported for transverse movement along the main section between a first position near the end thereof and a second position inwardly spaced therefrom and near the center of said main section; first powered means carried by the main section for shifting the member between its first and second positions; a vertical pivot structure carried by the member; means coupling the inner end of the outer section with the vertical pivot structure for swinging movement thereabout; and second powered means carried



between the member and outer section for swinging the latter between a transversely extended and a fore-and-aft position.

4,126,188

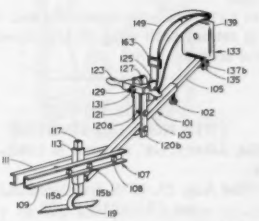
WALKING TYPE AGRICULTURAL IMPLEMENT WITH HARNESS

Bernard C. Armstrong, 535 Westmoreland, Jackson, Tenn. 38301

Continuation-in-part of Ser. No. 611,671, Sep. 9, 1975, Pat. No. 4,013,131. This application Mar. 21, 1977, Ser. No. 779,588

Int. Cl.[2] A01B *3/02*

U.S. Cl. 172—370 **10 Claims**



1. An agricultural implement of the walking type comprising:

an elongated body member having a cultivating assembly attached at one end thereof and a body support assembly attached at the opposed end thereof extending substantially vertically upwardly therefrom with a handle means attached thereto and disposed between said cultivating assembly and said body support assembly;

said cultivating assembly including a downwardly extending cultivating member and said elongated body member extending angularly in an upwardly direction in an operating position, said cultivating member including a cultivating edge directed towards an operator in said operating position, said cultivating edge being structured to facilitate digging by said edge into the ground when said edge is moved in the direction of the operator; and

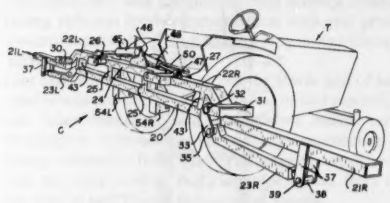
harness means attached at one end to said body support assembly and the other end to said handle member, said harness means including means for hitching an operator therein.

4,126,189

FOLDING TOOL CARRIER

Glenn L. Channel, Loveland, Ohio, assignor to Graber Industries, Inc., Hutchinson, Kans.

Filed Jan. 21, 1977, Ser. No. 761,251
Int. Cl.[2] A01B *51/04*
U.S. Cl. 172—456 **8 Claims**



1. A folding tool carrier having a single bar forming a central section and single bars forming wing sections, at each side of the central section, said wing section bars normally extending horizontally, in a substantial, longitudinal alignment with the central section bar, said sections being adapted to hold agricultural implements and the like, said tool carrier comprising:

(a) an inward arm directly above each side of the central section and having a greater elevation than the adjacent wing section when it is extended, with the inner end of each inward arm pivotally connecting with the central section at a point near the central portion of the central section and the outer end of each inward arm pivotally connecting with the inner end of the adjacent wing section;

(b) an outward arm directly below each wing section when the wing section is extended, with the inner end of each outward arm pivotally connecting with the adjacent end of the central section and with the outer end of each outward arm pivotally connecting with the wing section at a point near the outer end of, and below, the wing section; and

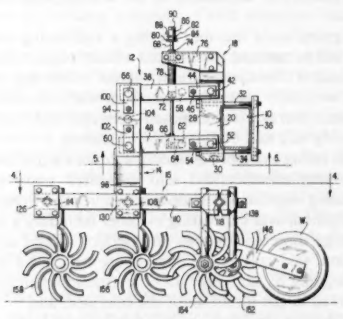
(c) means to swing the arms upwardly and over the central section to retract each wing section upwardly and over the central section.

4,126,190

TWIN ROW CULTIVATOR

M. Lynn Wylie, Albany, Ga., assignor to Lilliston Corporation, Albany, Ga.

Filed Aug. 27, 1976, Ser. No. 718,120
Int. Cl.[2] A01B *19/08*
U.S. Cl. 172—624 **3 Claims**



1. A cultivator attachment adapted to be connected to a main tool bar for cultivating bed-planted crop rows by means of cultivating members which engage the rows, comprising in combination:

a parallelogram linkage frame unit adapted to be connected to a main tool bar in trailing relation thereto and including a vertically disposed yoke movable in vertical, free-floating fashion; and

a bed cultivator frame of open, rectangular configuration detachably secured to the lower end of said yoke, said frame including a plurality of longitudinally spaced, horizontally extending tool bars and a pair of longitudinally extending side rails secured to the respective opposite ends of said tool bars;

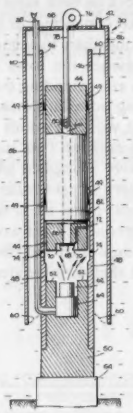
said yoke presenting transversely spaced leg portions at the lower end thereof and said side rails being in engagement therewith and secured thereto.

4,126,191

GAS DISCHARGE TYPE UNDERWATER HAMMER WITH LIQUID PURGE AND REFLOOD CONTROL

George J. Gendron, and Henry A. Nelson Holland, both of Houston, Tex., assignors to Raymond International Inc., Houston, Tex.

Filed Jun. 3, 1977, Ser. No. 803,302
Int. Cl.[2] B25D *9/00*
U.S. Cl. 173—1 **15 Claims**

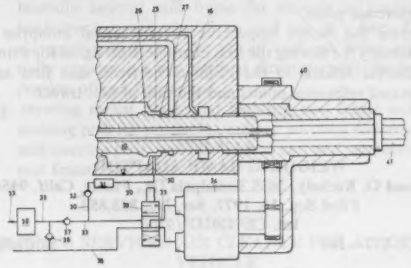


1. A submersible hammer comprising a vertical guide tube open at its upper and lower ends, a massive ram fitted inside said guide tube for up and down movement therein, an anvil located at the bottom of the guide tube in the path of downward movement of said ram and having an impact surface to be struck by said ram, a gas discharge device operable to release a sudden burst of high pressure gas into a cavity defined by and between said ram and anvil to drive the ram upwardly in the guide tube, said guide tube being formed with openings a finite distance above said anvil at a location such that said openings are sealed off from said cavity by the side of said ram when it is at rest on said anvil and such that they become unsealed during upward movement of said ram following operation of said gas discharge device and an outer casing surrounding and extending over said guide tube to entrap gas therein in the manner of a diving bell, said outer casing being open at a location below the impact surface of said anvil and the region of said guide tube above said ram being in communication with the space between said guide tube and said outer casing.

4,126,192
HYDRAULIC PERCUSSIVE MACHINES

Trevor E. Wallace, Bryanston, South Africa, assignor to The Steel Engineering Company Limited, Roodepoort, South Africa

Filed Mar. 9, 1977, Ser. No. 775,993
Claims priority, application South Africa, Mar. 17, 1976, 76/1652
Int. Cl.[2] B25D 9/00
U.S. Cl. 173—105 **3 Claims**

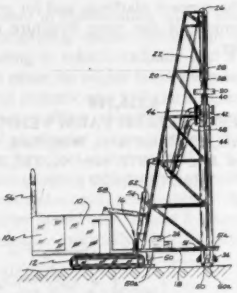


1. A hydraulic percussive machine comprising a cylinder, a piston reciprocable up and down in the cylinder, an inlet for hydraulic fluid to the machine, an outlet for hydraulic fluid from the machine, means for controlling the operation of the piston, a chuck for holding a tool, a hydraulic mechanism for rotating the chuck, means for leading hydraulic fluid to and from the chuck rotating mechanism, a cushioning flange on the piston, a dashpot space in the cylinder adapted to be entered by the flange on overtravel of the piston at the end of its downstroke, and a first connection for feeding fluid trapped under pressure in the dashpot space to the chuck rotating mechanism, whereby momentum of the piston at the end of its downstroke is converted into rotation of the chuck.

4,126,193
MOBILE DRILLING APPARATUS

Cicero C. Brown, deceased, late of Houston, Tex., and by Joe R. Brown, executor, P.O. Box 19236, Houston, Tex. 77024

Filed Mar. 19, 1976, Ser. No. 668,439
Int. Cl.[2] E21B 7/02
U.S. Cl. 175—171 **38 Claims**

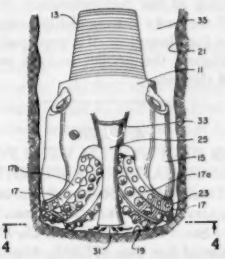


26. Self-propelled hole-drilling apparatus comprising:
(a) traction means for propelling said apparatus;
(b) a base assembly comprising:
(i) first base means supported by and attached to said traction means;
(ii) second base means, and
(iii) joint means, connecting said first base means and said second base means, selectively adjustable over a range of angles of orientation with respect to the horizontal about two mutually orthogonal axes of rotation, to permit said first base means and said second base means to be simultaneously oriented about said axes at different angles with respect to the horizontal in all operative positions of said drilling apparatus;
(c) first power means for operating said traction means to propel said apparatus;
(d) derrick means mounted on said base assembly;
(e) one hinge means, through which said derrick means is joined to said base assembly, and providing a third axis of rotation about which said derrick means may be selectively rotated with respect to said base assembly;
(f) second power means for selectively orienting said second base means about said two axes of rotation;
(g) power swivel means supported by said derrick means;
(h) third power means for controlling the height of said power swivel means;
(i) drill bit means suspended essentially below said swivel means and selectively rotatable by said swivel means for drilling holes; and
(j) drill guide means, cooperating with said derrick means, for selectively controlling the direction of drilling of said holes with respect to said second base means.

4,126,194
ROCK BIT WITH EXTENDED PICKUP TUBE

Robert F. Evans, La Habra, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jul. 11, 1977, Ser. No. 814,352
Int. Cl.[2] E21B 9/08
U.S. Cl. 175—340 **33 Claims**

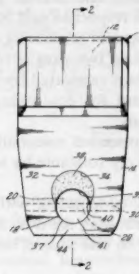


1. A drilling bit comprising:
a hollow body having an upper end for attachment to a rotating drill string, said body including a cavity for receiving high pressure drilling fluid from the center of said drill string;
nozzle means mounted on said body and connected to said cavity to receive high pressure drilling fluid from said hollow body to form primarily vertical, downward streams of fluid adjacent one side of said hollow body;
at least one and not more than three cone shaped cutters mounted on said hollow body, said cutters circumferentially spaced around the lower end of said body; and
a pickup conduit mounted on said body and extending from a location near the lowest extremity of said cone shaped cutters to a location adjacent the upper end of said body exterior of said body, said conduit permitting direct flow of fluid entering a drilled hole through said nozzle means to the annular space between said drill string and said drilled hole, said conduit including sidewall portions that prevent flow of said fluid through the side of said conduit but instead direct flow into the lower end of the conduit thereby enhancing horizontal flow of said drilling fluid near the bottom of said hole.

4,126,195
REPLACEABLE WEAR PAD FOR A ROCK BIT CUTTER YOKE

Robert L. Dixon, Brea, and William J. Neilson, Whittier, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Feb. 17, 1977, Ser. No. 769,423
Int. Cl.[2] E21B 9/08
U.S. Cl. 175—364 11 Claims

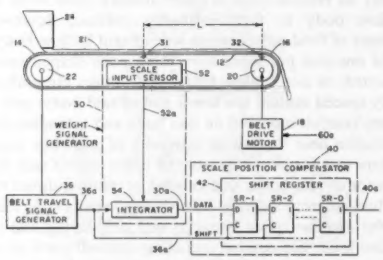


1. In a roller cutter assembly for a rotary head of a drilling machine, the cutter assembly comprising a yoke having a base for attachment to the rotary head and a pair of legs depending from the base, a mounting hole through each leg, the holes being aligned with each other, and a load pin extending between the legs of the yoke, the load pin being disposed within the holes, the improvement comprising a replaceable wear pad for each end of the load pin, each wear pad being disposed between the load pin and the portion of the periphery of each hole closest to the base, each wear pad extending around from about $\frac{1}{8}$ to about $\frac{1}{2}$ of the circumference of the load pin to prevent wear of the yoke during drilling and in which each hole has a pocket for placement of a wear pad so the periphery of each hole adjacent the pocket merges smoothly into the wear pad placed therein.

4,126,196
CONVEYOR BELT SYSTEM WITH POSITIONAL TRANSFORMATION OF WEIGHT DATA

Frank S. Hyer, Duxbury, and Raymond Karosas, Quincy, both of Mass., assignors to Hyer Industries, Inc., Pembroke, Mass.

Continuation of Ser. No. 599,315, Jul. 25, 1975, abandoned, which is a division of Ser. No. 495,068, Aug. 5, 1974, Pat. No. 3,960,225, which is a continuation of Ser. No. 418,088, Nov. 21, 1973, abandoned. This application Apr. 28, 1977, Ser. No. 791,876
The portion of the term of this patent subsequent to Jun. 1, 1993, has been disclaimed.
Int. Cl.[2] G01G 13/04; B65G 43/08
U.S. Cl. 177—121 7 Claims



1. Apparatus for a belt conveying a stream of material thereon having, in combination,

means to generate, at a time when a portion of the belt is adjacent a first reference point, a first characteristic signal related to weight of material associated with said portion,

means to generate pulses recurrent upon each unit distance of belt travel,

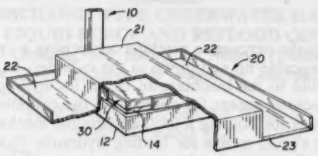
and means responsive to said signal and to the belt travel pulses to generate a stream of substantially uniform pulses, wherein each pulse in said stream represents a unit of weight of material associated with a portion of the belt adjacent a second reference point at the time of that pulse, said second reference point being downstream of said first reference point,

wherein the means responsive to said signal comprise a memory for storing the first characteristic signal for a time interval related to the distance between said first and second reference points and the rate of belt travel.

4,126,197
WEIGHING RAMP ADAPTOR

Raymond O. Kechely, 2635 Tamalpais Dr., Pinole, Calif. 94564

Filed Sep. 16, 1977, Ser. No. 833,853
Int. Cl.[2] G01G 19/00
U.S. Cl. 177—145 10 Claims



1. An adaptor for mounting a wheelchair weighing ramp structure upon a support platform of a weighing scale, the adaptor comprising:

a body member having a broad, planar surface and side walls connected to the outer periphery of the planar surface, the side walls extending generally perpendicular therefrom and terminating in edges that lie in a plane parallel to the planar surface;

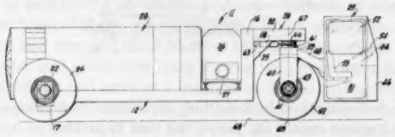
a plurality of tab elements attached to the body member, the tab elements being arranged, relative to the body member, to form a recess into which fits the support platform of the weighing scale; and

means connected to the body member for mounting the ramp structure thereto, for positioning the ramp structure relative to the support platform, and for preventing horizontal movement of the ramp structure relative to the body member.

4,126,198
THREE-WHEELED FARM VEHICLE

Howard H. Martin, 500 Mart Ave., Waterford, Calif. 95386

Filed Jun. 27, 1977, Ser. No. 810,203
Int. Cl.[2] B62D 5/00
U.S. Cl. 180—6.3 9 Claims



1. A three-wheeled farm vehicle comprising:

a. a fore and aft elongated frame;

b. a pair of ground engaging rear wheels supporting the after end of said frame;

c. a vertical steering post journaled on the forward end of said frame;

d. a ground engaging front wheel rotatably attached to said

steering post, said front wheel being capable of supporting said forward end of said main frame and of pivoting about the vertical axis of said steering post in unison with said steering post;

e. a cantilever mounted at one end on said steering post, the other end of said cantilever extending beyond the forward extremity of said front wheel;

f. a cab containing an operator's station mounted on said other end of said cantilever forwardly of said front wheel, said cantilever being of sufficient length to swing said cab laterally beyond said frame far enough to provide an unobstructed rear view from said cab in a line of sight alongside said frame, the top of said cab being substantially coextensive in a vertical direction with the highest portion of said frame; and,

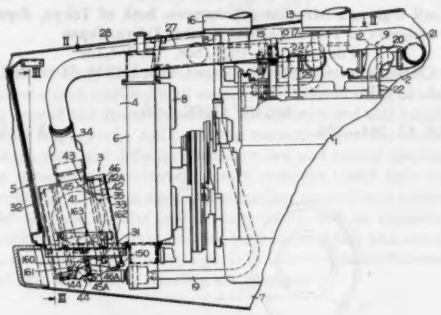
g. steering means connected between said frame and said steering post for producing unitary pivoting movement of said steering post, said front wheel and said cab relative to said frame.

4,126,199

BOTTOM SERVICED AIR CLEANER FOR A MOTOR VEHICLE

Kenneth N. Hansen, Waukesha, and Armand J. Ruka, Brookfield, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 9, 1977, Ser. No. 795,411
Int. Cl.[2] B60K *13/02*
U.S. Cl. 180—54 A **11 Claims**



1. An air cleaner in combination with a motor vehicle, the combination comprising, means defining an air cleaner compartment including a vehicle radiator and a grill in spaced relation to each other, an engine hood and a base plate extending between said radiator and grill, an air cleaner including a canister defining a filter chamber receiving an air filter mounted in said air cleaner compartment, a strainer connected to said cleaner for precleaning air before it enters said air cleaner, a servicing end on said canister extending externally of said compartment and a cover removably mounted thereon for enclosing said filter in said canister and for removal and servicing of said air cleaner externally of said compartment.

4,126,200

VEHICLE DRIVE SYSTEM

Morris L. Miller, and Daniel Locker, both of Jerusalem, Israel, assignors to The Scientific Research Foundation, Jerusalem, Israel

Filed Mar. 3, 1977, Ser. No. 774,228
Claims priority, application Israel, Mar. 12, 1976, 49201
Int. Cl.[2] B60K *9/04*
U.S. Cl. 180—66 R **27 Claims**

1. A vehicle drive system comprising:

a source of rotational energy;

a flywheel;

continuously variable transmission means comprising first and second drive terminals; and

means for selectable coupling of said variable transmission means and said source of rotational energy to said flywheel and drive wheels in a vehicle and including

first means for coupling in a first mode of operation;

(1) said flywheel and said source of rotational energy to said first drive terminal; and

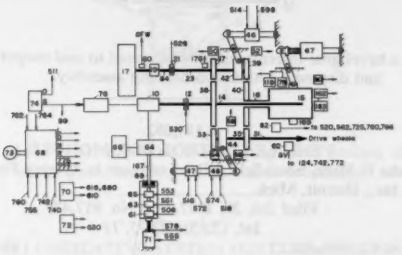
(2) said second drive terminal to the drive wheels of a vehicle; and

second means for coupling in a second mode of operation;

(1) said flywheel to said second drive terminal;

(2) said rotational energy source and said first drive terminal to said drive wheels; and

control means for governing the operation of said continuously variable transmission means and the operation of said source of rotational energy and being capable of



independent control of the speed of said flywheel and of said source of rotational energy

wherein said selectable coupling means also comprises first and second shaft means; and

wherein said first means is operative for coupling in said first mode of operation;

(1) said flywheel to said first shaft means;

(2) said first shaft means to said first drive terminal;

(3) said rotational energy source to said first drive terminal;

(4) said second drive terminal so said second shaft means; and said second means is operative for coupling in said second mode of operation;

(1) said flywheel to said first shaft means;

(2) said first shaft means to said second drive terminal;

(3) said rotational energy source to said first drive terminal; and

(4) said first drive terminal to said second shaft means.

4,126,201

TRANSMISSION ARRANGEMENT

W. Gene Stevens, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

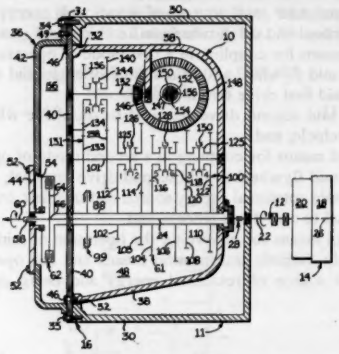
Filed Sep. 6, 1977, Ser. No. 831,026
Int. Cl.[2] B60K *20/00*
U.S. Cl. 180—70 R **10 Claims**

1. A transmission arrangement for a vehicle having a frame defining an outwardly facing opening and a mounting face located peripherally about the opening, comprising:

a housing assembly having a mounting member and a transmission case, said mounting member being releasably connected to said frame at said mounting face and said transmission case being releasably connected to said mounting member and extending inwardly into said opening;

transmission means for selectively providing one of a plurality of speed ratios and forward and reverse operation, said

transmission means including an output pinion and being disposed substantially within said housing assembly; and



a bevel gear intermeshingly connected to said output pinion and disposed within said housing assembly.

4,126,202

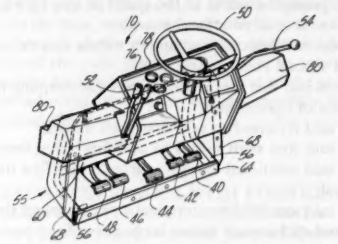
VEHICLE CONTROL BOX MODULE

John F. Hern, Southfield, Mich., assignor to Massey-Ferguson, Inc., Detroit, Mich.

Filed Jul. 20, 1977, Ser. No. 817,477

Int. Cl.[2] B62D *25/14*

U.S. Cl. 180—89.12 **10 Claims**



1. A tractor comprising a main body including an engine and transmission, the main body in unsuspended relationship to ground-engaging wheels, an operator's station resiliently supported relative to said main body, said operator's station including a bulkhead at a forward portion thereof, an opening in said bulkhead, a control module including an open box positioned on said bulkhead on the side opposite said operator's station to close said opening, controls for said engine, transmission and wheels supported relative to said box and terminating at the other side of said bulkhead, and means connecting said controls to said engine, transmission and wheels and permitting relative movement of said box and main body.

4,126,203

AIR-COUPLED SEISMIC DETECTOR

Dale E. Miller, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 25, 1976, Ser. No. 661,064

Int. Cl.[2] G01V *1/16*

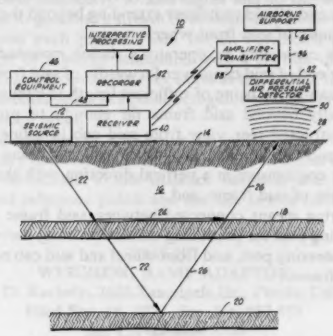
U.S. Cl. 181—109 **12 Claims**

1. A method of seismic surveying over a designated earth surface area, comprising the steps of:

generating seismic energy input to the earth from a seismic source located at a first earth surface position;

detecting the vertical component of subsurface reflected seismic energy at a second pre-selected earth surface position by detecting the air pressure variations immediately thereabove;

repeating said steps of generating and detecting for other pre-selected positions of said earth surface that are related



in proximity and directionally to said first and second earth surface positions; and processing the detected seismic energy to derive output indication for interpretive use.

4,126,204

SPEAKER SYSTEM

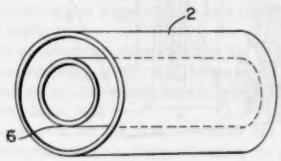
Kenji Ogi, and Masakatsu Sakamoto, both of Tokyo, Japan, assignors to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1977, Ser. No. 764,220

Claims priority, application Japan, Feb. 2, 1976, 51-10826[U]; Feb. 2, 1976, 51-10827[U]

Int. Cl.[2] H05K *5/00*

U.S. Cl. 181—156 **3 Claims**



1. A base-reflex loudspeaker system comprising a cabinet, a loudspeaker opening in said cabinet, a loudspeaker mounted over said loudspeaker opening in said cabinet, a further opening in said cabinet, a first hollow duct mounted in said further opening and substantially extending into said cabinet, and a standing wave prevention member comprising a further hollow duct with a diameter smaller than that of said first hollow duct, said further hollow duct being substantially as long as said first hollow duct and being coaxially disposed and mounted therein, so that standing waves can be prevented from forming in said first hollow duct without introducing a high impedance to sound waves radiating therethrough.

4,126,205

AUTOMOBILE EXHAUST GAS MUFFLER CONSTRUCTION

Walter Bauerschmidt, Kirchheim-Ötlingen, Germany, assignor to J. Eberspächer, Germany

Filed Mar. 17, 1977, Ser. No. 778,474

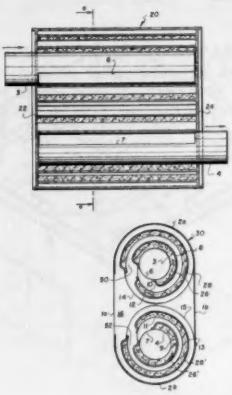
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1976, 2612421

Int. Cl.[2] F01N *1/10*

U.S. Cl. 181—256 **8 Claims**

1. An automobile exhaust gas muffler construction for flow-

ing exhaust gases, comprising a housing having spaced apart semi-cylindrical end walls, substantially straight side walls tangentially interconnecting said end walls, and front and rear walls, and a tubular inlet connection for the inflow of gases into said housing secured to and extending into said housing front wall and through at least a portion of said housing and having a first flow passage slot extending along at least a portion of said inlet length within said housing, a tubular outlet connection for the outflow of gases from said housing secured to and extending into said rear wall and through at least a portion of said housing having a second flow passage slot



extending along said outlet length within said housing, first and second sound-muffling wall means within said housing extending around and spaced from said tubular inlet and said tubular outlet, respectively, and overlying respective first and second slot passages and defining respective first and second spiraling gas passages communicating with respective said first and second flow passage slots and extending around said tubular inlet and said tubular outlet, respectively, and an expansion chamber defined in said housing between said first and second gas passages and providing a gas flow communication between said first and second spiraling gas passages.

4,126,206

LADDER GUARD

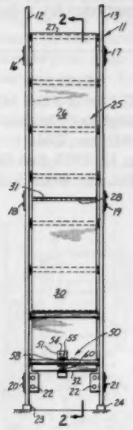
Bradly M. Becnel, Temple City, Calif., assignor to Sunset Ladder Company, South El Monte, Calif.

Filed Oct. 20, 1977, Ser. No. 844,030

Int. Cl.[2] E06C *5/32*

U.S. Cl. 182—129 **6 Claims**

1. A guard to bar access to ladder rungs comprising: a first sheet having an upper and lower edge, a hook on said upper edge for engaging a ladder rung from a front face of the ladder, a hinge part on said lower edge; a second sheet having a upper and a lower edge, a hinge part on said upper edge forming with said hinge part on said first sheet a hinged joinder of the two sheets at the respective edges; a joggle in the second sheet between its said edges; and releasable lock means on the other side of the joggle from the upper edge of the second sheet for holding the second sheet to a ladder rung when the hook is over a ladder rung, and the joggle passes between two ladder rungs, whereby to hold the first sheet and at least part of the



second sheet in front of the ladder rungs and prevent the removal of the guard unless the lock means is released.

4,126,207

SPLASH LUBRICATING SYSTEM FOR COAL GRINDING ROLLS

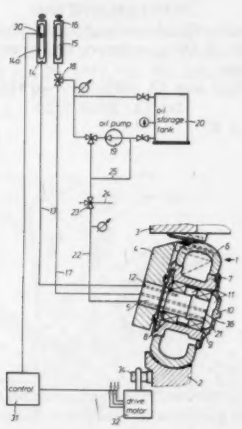
Günter Dibowski, Essen, and Helmut Grammes, Duisburg, both of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Germany

Filed Feb. 22, 1977, Ser. No. 770,374

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1976, 2612390

Int. Cl.[2] F16N *29/02;* **B02C** *15/00*

U.S. Cl. 184—1 C **4 Claims**



1. A splash lubricating system for supplying oil to an interior reservoir of a coal grinding apparatus for lubricating the bearings of a grinding roll, comprising a grinding roll, ring means cooperative with said grinding roll to grind material therebetween, bearing means rotatably supporting said grinding roll including an interior oil reservoir, a plurality of exterior oil supply reservoirs each having a separate oil supply line connected therefrom to said interior oil reservoir, at least one of said exterior supply reservoirs having an oil storage tank, a

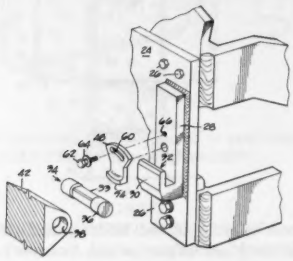
pump connected to said oil storage tank and to said interior oil reservoir for directing the oil from said storage tank to the reservoir, and level indicating means associated with each of said exterior supply reservoirs for indicating the level of oil in said interior reservoir.

4,126,208

ADJUSTABLE LOCK FOR MAST HANGER

Milford D. McVeen, Highland Heights, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Aug. 12, 1977, Ser. No. 823,903
Int. Cl.[2] B66F *9/20*
U.S. Cl. 187—1 R **7 Claims**



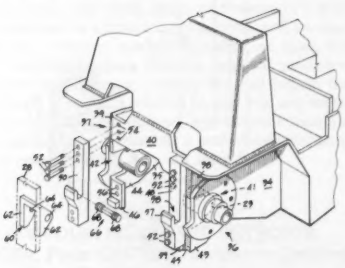
4. An adjustable lock for a mast hanger of a lift truck which includes a hook member supported on the truck frame and a shaft member mounted on a mast assembly and supported on said hook member comprising, a cam member, means for rotatably mounting said cam member on the hook member, said cam member being arranged to engage said shaft member upon rotation thereof on the hook member and securing means for securing the cam member against rotation, whereby it can be locked against the shaft member.

4,126,209

MAST MOUNTING

Robert D. Higgins, Highland Heights, and Richard A. Schwehr, Mentor, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Aug. 12, 1977, Ser. No. 823,904
Int. Cl.[2] B66F *9/20*
U.S. Cl. 187—1 R **13 Claims**



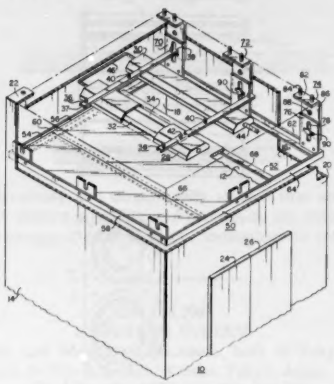
7. A fork lift truck comprising spaced parallel frame members defining U-shaped openings at one end of said frame members, transverse plate members secured to said one end of said frame members, hanger plate means removably secured to said transverse plate members and spanning said U-shaped openings, means provided on said hanger plate means for receiving mast support shafts therein and an axles assembly disposed within said U-shaped openings in the frame members which may be removed therefrom upon removal of the hanger plate means from the transverse plate members.

4,126,210

ELEVATOR CAR WITH ADJUSTABLE ILLUMINATION LEVEL AND DISTRIBUTION PATTERNS

Niles J. Martin, Bonneauville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 705,184, Jul. 14, 1976, abandoned. This application Jul. 27, 1977, Ser. No. 819,327
Int. Cl.[2] B66B *11/00*; B60Q *3/00*; F21V *21/02*
U.S. Cl. 187—1 R **1 Claim**



1. An elevator car, comprising:

a passenger compartment having roof and side wall portions,

elongated track means having a first predetermined cross-sectional configuration fixed to said roof portion within said passenger compartment, said elongated track means having a length dimension sufficient to receive and support more than one lighting fixture,

at least two lighting fixtures slidably mounted on said elongated means,

said lighting fixtures including mounting members having a second predetermined cross-sectional configuration, said first and second predetermined cross-sectional configurations being cooperatively configured to provide support and enable adjustable positioning of said lighting fixtures, with one being substantially C-shaped, and the other substantially T-shaped.

flexible electrical conductor means connected to said lighting fixtures, said flexible electrical conductor means having lengths selected to enable the initial positions of said lighting fixtures to be adjustably selected, and for enabling their positions to be subsequently changed within a predetermined adjustment range,

said elongated track means permitting lighting fixtures to be added and removed therefrom to achieve a desired illumination level in said passenger compartment, as well as providing horizontal adjustment of a lighting fixture relative to certain of the sidewall portions and relative to any other lighting fixtures which may be mounted on said elongated track means.

a frame assembly including removable light diffusing shield means,

and adjustable mounting means, said adjustable mounting means mounting said frame assembly below said roof portion within said passenger compartment, in vertically spaced relation relative to said lighting fixtures, to provide a vertically adjustable dropped ceiling in said passenger compartment,

said adjustable mounting means including a plurality of bracket assemblies accessible from within said passenger compartment through said frame assembly by displace-

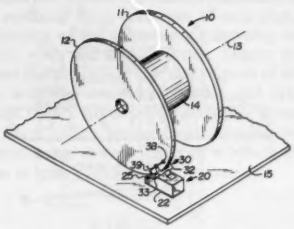
ment of said removable light diffusing shield means, each of said bracket assemblies including first and second members fixed to said roof portion, and to said frame assembly, respectively, with one of said first and second members including a vertically oriented slot, and fastener means linking said first and second members via said slot, said bracket assemblies permitting adjustable selection of the initial vertical distance between said lighting fixtures and said frame assembly, and enabling said distance to be subsequently changed, permitting the light distribution pattern within the passenger compartment, and the illumination pattern on the light diffusing shield means, to be adjustably selected.

4,126,211

CABLE REEL RESTRAINING APPARATUS

Carl J. Blosser, Normal, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 31, 1977, Ser. No. 846,868
Int. Cl.[2] B60T *3/00*
U.S. Cl. 188—32 **6 Claims**



1. A cable reel restraining apparatus to be used with a cable reel including at least two circular flanges, resting on a supporting surface comprising:

a chock restraining element with a plurality of surfaces including a generally planar spaced apart and parallel top surface and bottom surface, located between first and second spaced apart and parallel end surfaces, said first end surface further including a planar truncated surface longitudinally oriented between a portion of said first end surface and a portion of said top surface;

clamping means rotatably mounted on said top surface of said restraining element by a freely pivoting pin hinge with a first leaf mounted on said top surface of said restraining element and a second leaf mounted on said clamping means disposed to secure said restraining element to a circular flange of said cable reel when said restraining element's truncated surface is engaged with said flange to form a tangent therewith and said bottom surface is resting on said supporting surface, whereby rolling motion of said cable reel is prevented when a force is applied perpendicular to said tangent.

4,126,212

CRASH LOAD ATTENUATING VALVE FOR AN AIRCRAFT LANDING GEAR SHOCK STRUT

R. W. Crawley, West Chester, Pa., assignor to The Boeing Co., Seattle, Wash.

Continuation of Ser. No. 720,426, Sep. 3, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 847,389
Int. Cl.[2] F16F *9/34*
U.S. Cl. 188—317 **6 Claims**

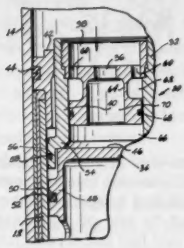
1. A shock strut having a pair of elongated hollow tubes fitted coaxially together for relative reciprocal movement, and attentuating valve means mounted within one of said tubes and defining with said tubes a high pressure and a low pressure chamber, the improvement in the attenuating valve means including: a single integral valve body, comprising:

a cylindrical portion open at one end and defining a convergent flow path into which a fluid medium flows from the high pressure chamber;

a transverse wall, extending across the convergent flow path and closing the other end of the cylindrical portion, said transverse wall having formed therein:

i. at least one primary orifice through which the fluid medium in the convergent flow path flows from the high pressure chamber to the low pressure chamber whenever a load is imposed on the strut; and

ii. at least one additional orifice, essentially parallel to said at least one primary orifice, through which the fluid medium in the convergent flow path is in communication with a further fluid pressure chamber; and



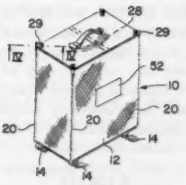
a continuous separating wall, extending from the transverse wall between the primary and additional orifices on the low pressure side of said at least one primary orifice and defining at least one wall of said further fluid pressure chamber, said continuous separating wall being exposed on opposing sides to the high pressure in the further fluid pressure chamber and to the low pressure downstream of said at least one primary orifice and having a thickness along at least a portion thereof such that rupture of said portion occurs when the pressure differential across it exceeds a predetermined level.

4,126,213

COLLAPSIBLE SUITCASE

William G. McDonald, 307 E. 162nd St., Bronx, N.Y. 10456

Filed Jul. 29, 1977, Ser. No. 820,309
Int. Cl.[2] B65D *5/14*
U.S. Cl. 190—18 A **4 Claims**

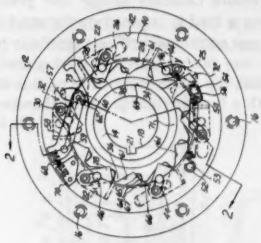


1. A collapsible case of adjustable size comprising, in combination, a rigid member, a plurality of adjoining flexible panels having one end secured to said rigid member and an opposite free end; each panel having slide fastener tracks between said ends cooperating with slide fasteners on the adjoining panels, a slider connecting fasteners on adjoining panels for zippering said panels together to form with said end member a box-like structure; and an attachable closure having a plurality of individual latch means for securing to each slider to form a closed structure of a size dependent on the length of said fasteners zippered by said sliders.

4,126,214
POSITIVE ONE-WAY CLUTCH SYSTEM

Laszlo J. Kiss, 7044 Paige, Warren, Mich. 48091

Filed Nov. 23, 1976, Ser. No. 744,276
Int. Cl.[2] F16D *41/12*
U.S. Cl. 192—36 13 Claims



1. A positive one-way drive mechanism comprising a first rotatable member, a second rotatable member coaxially disposed relative to said first rotatable member, a transfer member movably supported by one of said rotatable members and disposed between said first and second rotatable members, an abutment seat in each of said rotatable members, a pair of abutment faces on said transfer member each for engagement with one of said abutment seats, positioning means for moving said transfer member from a driving engagement position whereby said abutment faces each engages one of said abutment seats to a non-driving disengagement position whereby at least one of said abutment faces is disengaged from one of said abutment seats, and means for actuating said positioning means as a function of the relative rotation of said first and second rotatable members whereby said transfer member is in driving engagement for driving one of said rotatable members by the other in one direction of rotation only and said transfer member is in non-driving disengagement when the relative rotation of said first and second rotatable members is reversed, wherein said positioning means comprises a movable positioning ring carried by said rotatable member movably supporting said transfer member, means on said positioning ring for moving said transfer member into said driving engagement and for retracting said transfer member into said non-driving disengagement, spring bias means urging said positioning ring for moving said transfer member to said non-driving disengagement, an actuating arm for said positioning ring, at least one one-way actuator element carried by the other of said rotatable members, an actuator member on said arm engageable with said one-way actuator element, and spring bias means urging said actuator member toward said actuator element for engagement therewith for actuating said positioning ring for moving said transfer member into said driving engagement for one direction of relative rotation of said rotatable members, said actuator member and said one-way actuator element being disengaged during opposite direction of relative rotation.

4,126,215
SEALED ELECTROMAGNETIC TORQUE TRANSLATING DEVICE

John F. Puro, Elmira, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Dec. 20, 1976, Ser. No. 752,504
Int. Cl.[2] F16D *27/10*
U.S. Cl. 192—84 C 9 Claims

1. A torque translating device comprising:

a shaft;

a driven clutch member mounted to said shaft for rotation therewith;

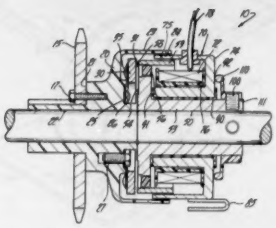
a driving clutch member mounted adjacent said driven clutch member for communication therewith;

an armature member mounted to one of said clutch members;

electromagnetic actuating means mounted to the other of said clutch members for providing a torque translating driving engagement between said clutch members when said electromagnetic actuating means is energized;

means for mounting said armature to one of said clutch members, said mounting means comprising a resilient member interposed said armature member and said one of said clutch members, said resilient member being attached to said armature and said one of said clutch members such that when said electromagnetic actuating means is energized, said resilient member deflects from a first position to permit said armature to engage said other clutch member and when said electromagnetic actuating means is de-energized, said resilient member returns said armature to said first position;

means for mounting said electromagnetic actuating means to the other of said clutch members, said mounting means having a first bearing member mounted coaxially with



said other of said clutch members, said bearing member allowing said electromagnetic actuating means to remain fixed with respect to the clutch members upon energization of said electromagnetic actuating means;

said one of said clutch members further having an annular axially extended outer diameter cup shaped portion in sliding engagement with said electromagnetic actuating means such that said armature member and electromagnetic means are sealed to avoid foreign matter from entering the area of engagement between said armature and said other clutch member; and

means for sealing said first bearing member interposed said electromagnetic actuating means and the other of said clutch members, said sealing means mounted to the other of said member, said means for sealing being rotatable and in sealing engagement with said electromagnetic actuating means such that said first bearing member is sealed to prevent foreign matter from entering the bearing surfaces between said electromagnetic actuating means and the other of said clutch members.

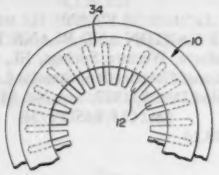
4,126,216
CLUTCH PRESSURE PLATE NOISE REDUCTION

Bryce W. Babcock, Saline; Mark P. Reynolds, Birmingham, and Kulbir Saluja, Southfield, all of Mich., assignors to Federal-Mogul Corporation, Detroit, Mich.

Filed Aug. 2, 1976, Ser. No. 710,508
Int. Cl.[2] F16D *13/44*
U.S. Cl. 192—89 B 5 Claims

1. A clutch assembly including a flywheel, a pressure plate normally engaged to rotate with the flywheel and axially disengageable in relation therewith, a friction disc interposed between the flywheel and the pressure plate, and a clutch spring operatively associated with the pressure plate whereby upon exertion of an actuation force to the clutch spring, the pressure plate will cause the interposing friction disc to be disengaged from the flywheel, wherein said clutch spring is of a generally frustoconical shaped disc having a centrally located bore adapted to surround a shaft upon which is fixed said

friction disc, said clutch spring being of spring steel and slotted beginning at the periphery of said bore and extending radially outwardly to a point intermediate the periphery of said bore and the outer periphery of said frustoconical shaped disc so as to form therebetween a plurality of inwardly extending integral clutch spring fingers, each said clutch spring finger having a free end toward the axis of rotation of said pressure plate and a surface at said free end adapted to receive the actuation force, damping means for damping objectional resonance and



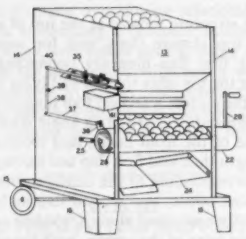
sympathetic vibrations within the audible frequency range in a clutch spring resulting from actuation of said clutch spring fingers, said damping means comprising a damping material in intimate contact with said clutch spring fingers at an area remote from said surface of said free end of each of said clutch spring fingers, whereby audible resonance and sympathetic vibrations caused in said clutch spring fingers as a result of the free end each such clutch spring finger coming into initial contact with and being in rotation with a clutch throw-out bearing, will be at least substantially eliminated.

4,126,217

GOLF BALL VENDING MACHINE

Oscar Bock, P.O. Box 551, Madison, Wis. 53701

Filed Jul. 14, 1977, Ser. No. 815,599
Int. Cl.[2] G07F *11/54*
U.S. Cl. 194—93 **4 Claims**



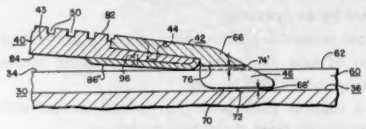
1. A golf ball vending machine comprising:
(a) a ball hopper having a bottom pan;
(b) a declining ramp extending below said hopper bottom pan in spaced relation thereto, said pan and ramp defining a ball dispensing opening therebetween;
(c) a gate pivotally mounted below said hopper pan above said declining ramp at said opening rotatable between (1) a downwardly extending closed position wherein the lower edge of said gate is spaced more than the diameter of one ball and less than the diameter of two balls from said ramp to cause said balls in said hopper to bridge across said opening, and (2) a release position in which said gate is swung toward the mass of balls in the hopper to break up the bridging of balls therein for releasing balls down said ramp;
(d) a ball receptacle extending across the lower end of said declining ramp, said ball receptacle having an interior opening for receiving and holding balls therein and being rotatable between a ball receiving position wherein said interior opening is in position to receive balls from said ramp and a dumping position wherein the ball receptacle is rotated so that balls in said interior opening are discharged from said ball receptacle;
(e) manually movable actuating means operatively linked to said ball receptacle and said gate for (1) rotating said ball receptacle between its receiving position and its dumping position and for (2) rotating said gate at least once from said closed position to said release position and back to said closed position during the operation of said actuating means by an operator;
(f) a coin releasable locking mechanism for preventing operation of said manually movable actuating means, said locking mechanism having
(1) a support plate having a portion thereof extending outwardly from the vending machine,
(2) a draw plate mounted for sliding back-and-forth movement on said support plate between a foward coin-receiving position, an intermediate locking position, and a rear coin discharging position,
(3) said draw plate having a coin receiving opening extending therethrough, said coin receiving opening being disposed over the extending portion of said support plate when said draw plate is in its forward coin receiving position so that a coin deposited in said coin receiving opening is supported therein by the extending portion of said support plate,
(4) said support plate having a coin reject opening rearwardly of its extending portion, said coin reject opening being of smaller diameter than and positioned for alignment with the coin receiving opening in said draw plate when said draw plate is in its locking position for receiving any coin of smaller than proper size deposited in said coin receiving opening and allowing such smaller coin to be rejected through said reject opening but allowing said support plate to support a coin of proper size in said coin receiving opening,
(5) latch means biased downwardly against the top of said draw plate for dropping into the coin receiving opening thereof when said draw plate is moved into its locking position to prevent further rearward movement for said draw plate when there is no coin of the proper size in said coin receiving opening, said latch means being adapted to ride over a properly sized coin in the coin receiving opening of said draw plate without dropping into the coin receiving opening and thereby allowing said draw plate to pass unimpeded through its intermediate locking position rearwardly to its coin-discharging position,
(6) said support plate having a coin discharge opening rearwardly of said coin reject opening and positioned for alignment with the coin receiving opening in said draw plate when said draw plate is moved to its coin dropping position, said coin discharge opening being at least as large as said coin receiving opening for allowing coins to drop therethrough, and
(g) mechanical linkage means linking said manually movable actuating means and said draw plate for drawing said draw plate rearwardly from its coin-receiving position, through its locking position to its rearward coin-discharging position, and back to its coin-receiving position, as the ball receptacle is rotated from its ball receiving position to its ball discharge position and back again, by operation of said actuating means when a coin of proper size has been deposited in the coin receiving opening in said draw plate.

4,126,218

TRANSPORTATION APPARATUS WITH PROTECTIVE ARRANGEMENT FOR COMBPLATE TEETH

Mohamed A. El Taher, Highland Township, Adams County, and Matthew G. Bertovich, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 14, 1977, Ser. No. 787,632
Int. Cl.[2] B66B 9/12; B65G 47/66
U.S. Cl. 198—325 **6 Claims**



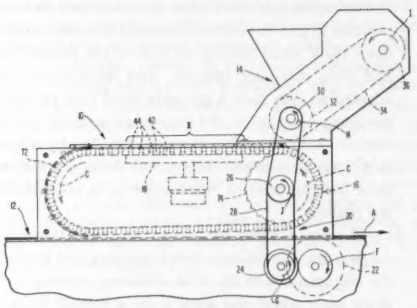
1. Transportation apparatus for transporting persons between spaced landings, comprising:
   a load bearing conveyor including a plurality of moving platforms,
   each of said platforms having a plurality of spaced, upstanding cleats and intervening grooves which extend in the direction between the landings,
   a combplate at at least one of the landings having a plurality of spaced, depending teeth which mesh with the cleats of each platform during relative motion therebetween,
   and means carried by said combplate defining a pad portion adjacent to said teeth, said pad portion being dimensioned and positioned to contact said cleats before the teeth bottom in the grooves between said cleats, when the combplate is stressed by a deflecting load, preventing contact between said teeth and a moving platform, as each platform passes beneath said combplate.

4,126,219

BOLUS ORIENTER

Charles F. Bross, Chicago, Ill., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 25, 1977, Ser. No. 827,490
Int. Cl.[2] B65G 47/24
U.S. Cl. 198—382 **6 Claims**



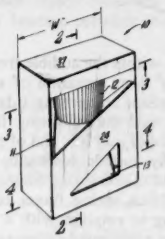
1. Apparatus for delivering boluses into receptacles arranged in recurring arrays in a moving web, comprising:
   (a) an endless conveyor including rotatably connected slats, at least some of said slats having recesses for receipt of boluses, the number and spacing of recesses defined by spacing of said receptacles and said arrays, end tabs of said slats slidably resident in opposed tracks;
   (b) a pair of opposed tracks defining the path of said conveyor, a track upper portion defining a filling area wherein said conveyor travels longitudinally allowing boluses introduced to said conveyor to pursue said recesses;
   (c) spaced guides for dividing boluses into horizontally separate groups, extending over said filling area, above said conveyor, connected to said tracks;
   (d) retractable dividers interposed between and contacting adjacent slats and including divider end tabs resident within said tracks;
   (e) means for advancing said dividers to protruding positions relative to said slats in said filling area; and
   (f) means for moving said conveyor at the same speed as said longitudinally moving web.

4,126,220

DISPLAY CARTON AND BLANK THEREFOR

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 5, 1977, Ser. No. 857,099
Int. Cl.[2] B65D 5/50
U.S. Cl. 206—45.14 **5 Claims**



1. A display carton for an elongated bottle having at one end a cap, while the other end thereof is a closed base portion, said carton having front, back, and side panels arranged in a general rectangular tubular configuration with end flaps closing the top and bottom ends thereof; and with the width of the carton being greater than the width of said cap and the base portion of the bottle, while the length of said carton substantially corresponds to the length of said elongated bottle, said carton comprising:
   a top support structure located at the top of said carton and inside the top closure flaps, said top support structure including a first flap hingedly connected to said back panel along the top edge thereof and lying on the inside of the top of the carton, a second flap hingedly connected to said first flap and oriented at an angle with respect to the inside plane of the front panel, said second flap being of greater length than said first flap and having a first central opening corresponding to the configuration of the cap of the elongated bottle, said second flap including two sections hingedly connected along a fold line extending parallel to the top edge of the carton, with the section contiguous to said glue flap being of greater length than the other section, and with said first central opening being defined by two V-shaped slots, said second flap serving to restrain said elongated bottle cap from lateral movement within said carton; and a first glue flap hingedly connected to said second flap and arranged vertically on and adhesively bonded to the inside of said back panel; and
   a bottom support structure located at the bottom of said carton and inside said bottom closure flaps, said bottom support structure including a first bottom flap hingedly connected to said bottom panel along the bottom edge thereof and lying on the inside of the bottom of the carton, a second bottom flap hingedly connected to said first bottom flap and oriented at an angle with respect to the inside plane of the front panel, said second bottom flap being of greater length than said first bottom flap and having a second central opening corresponding to the configuration of the base portion of the elongated bottle, said second bottom flap including two sections hingedly connected along a fold line extending parallel to the bottom edge of the carton, with the section of said second

bottom flap contiguous to said bottom glue flap being of greater length than the other section of the second bottom flap and with the second central opening being defined by two V-shaped slots, said second bottom flap serving to restrain said base portion from lateral movement within said carton; and a bottom glue flap hingedly connected to said second bottom flap and arranged vertically on and adhesively bonded to the inside of said back panel.

4,126,221

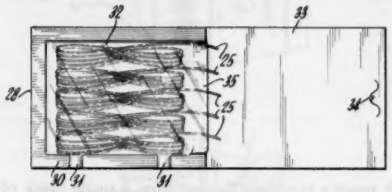
PACKAGE FOR MULTIPLE SURGICAL SUTURES

Robert J. Cerwin, Pittstown, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 787,171, Apr. 13, 1977, abandoned. This application Nov. 8, 1977, Ser. No. 849,562

Int. Cl.[2] A61L *17/02*

U.S. Cl. 206—63.3 **19 Claims**



1. A multistrand suture package providing individual suture delivery comprising a plurality of suture strands, each strand being individually coiled in a series of overlapping elongated convolutions disposed in sequence from one end of the suture to the other, each convolution having a longitudinal axis lying in a plane, the longitudinal axis of adjacent convolutions of each suture strand being substantially parallel and laterally displaced from each other in said plane, and each individual suture being laterally displaced from adjacent sutures in a contiguous and partially overlapping relationship, and suture retaining means comprising a common suture compartment within said package, said suture strands being retained in said compartment in the aforesaid configuration with one end of each suture extending from said compartment, whereby individual suture strands may be grasped and withdrawn from said compartment without entangling sutures remaining in the compartment.

4,126,222

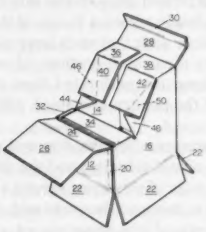
REINFORCED FORM-FITTING SHIPPING CONTAINER

John J. Aust, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 6, 1978, Ser. No. 867,401

Int. Cl.[2] B65D *85/54*

U.S. Cl. 206—326 **5 Claims**



1. A blank of substantially rectangular outline defined by spaced upper and lower longitudinal edges and spaced transverse side edges, adapted to be formed into a stepped container having a reinforced inclined upper front wall, comprising

a series of rectangular blank sections including a front wall section, two side wall sections, and a rear wall section, arranged in side-by-side relation;

said front wall section comprising, in the order named, a lower front wall panel extending upwardly from said lower edge of said blank, an intermediate horizontal wall panel and an upper front wall panel, foldably joined to each other along spaced first and second longitudinal fold lines, respectively;

said rear wall section comprising a rear wall panel extending upwardly from said lower edge of said blank and having a transverse dimension substantially greater than that of said lower front wall panel, and a top wall panel joined to said rear wall panel along an upper longitudinal fold line;

each of said side wall sections comprising a side wall panel having a stepped upper edge defined by

a short lower score line aligned with said upper fold line and having a length corresponding to the spacing of said first and second fold lines;

a short upper score line aligned with said upper fold line and having a length corresponding to the transverse dimension of said top wall panel;

a diagonal score line interconnecting said lower and upper score lines;

said side wall sections each including:

a first reinforcing flap foldably joined to said lower score line and defined by slots extending from the ends of said lower score line to the upper edge of said blank,

a second reinforcing flap foldably joined to said upper score line and defined by a slot extending from one end of said upper score line to the upper edge of the blank and by a perpendicular score line extending from the other end of the upper score line to the free edge of the blank,

at least one stabilizing flap hingedly attached to said second reinforcing flap, and

at least one reinforcing panel foldably joined to said side wall panels along said diagonal score line and being foldably attached to said stabilizing flap along a fold line extending from said perpendicular score line to a free edge of said stabilizing flap.

4,126,223

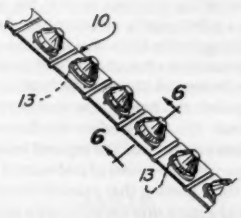
BARRIER DEVICE, PACKAGING AND METHOD

Richard J. Griffin, 848 S. Johnson Ct., Denver, Colo. 80226

Filed Sep. 11, 1974, Ser. No. 505,098

Int. Cl.[2] B65D *85/20, 85/54*

U.S. Cl. 206—445 **5 Claims**



1. A packaged barrier device for separating components having different specific gravities by centrifugation, comprising: a strip of pliable material having at least one depression defined therein, the depression being in the form of an initial flared opening with the larger diameter of the opening adjacent the mouth of the depression, a tapered depression section adjacent the flared opening with the narrower portion of the tapered section connected to the narrower portion of the flared opening, and a domed end section connected to and extending from the enlarged portion of the tapered section, a circular

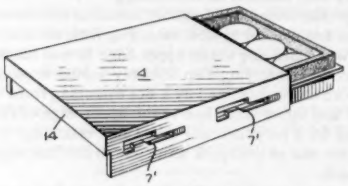
barrier device positioned in the depression, the barrier device comprising a circular member having at least one opening therethrough and a post member extending axially from the center of the circular member, the circular member being received and secured in the depression at the tapered portion with the post member extending into the depression in close proximity to the domed portion of the material defining the depression.

4,126,224

MOISTURE-PROOF AND CHILD-RESISTANT PILL BOX

Robert H. Laauwe, 237 Green Ridge Rd., Franklin Lakes, N.J. 07417, and Stanley L. Roggenburg, Jr., 70 St. James Pl., Staten Island, N.Y. 10304

Filed Nov. 3, 1977, Ser. No. 848,329
Int. Cl.[2] B65D *83/04*
U.S. Cl. 206—540 **3 Claims**



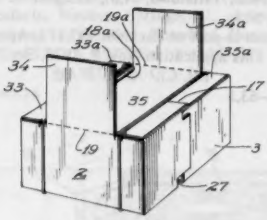
1. A substantially moisture-proof and child-resistant pill box comprising horizontally relatively sliding top and bottom parts each made of substantially rigid material, said bottom part having upstanding front and back walls and side walls extending horizontally and lugs transversely extending from the outside of each side wall and which are horizontally interspaced, the tops of said walls forming a rim and on which a resilient gasket adapted for vertical elastic compressibility is positioned; said top part forming a cover for the box and having a bottom surface forming a sliding seat for said gasket and having depending flanges overlapping the bottom part's side walls and the flanges having openings into which said lugs transversely project and normally hold said top and bottom parts together with said gasket at least slightly compressed against said seat of the top part so that the latter covers the bottom part in a substantially moisture-proof manner; each of said openings being in the form of a slot having a first portion that extends upwardly so that the top and bottom parts can by finger pressure be moved together by further elastically compressing said gasket, and having a second portion that extends horizontally from the first portion so that with the gasket remaining further compressed the top and bottom parts can be slid partially apart for the extent of said second portion, the slot then having a third portion that extends downwardly so as to permit the lug to return downwardly with consequent release of the gasket's further compressed state when said finger pressure is released, and the slot having a fourth portion that extends further horizontally and permits the top and bottom parts to be slid further apart for the extent of said fourth slot; each opposite two of said lugs and openings on the opposite sides of the box being mutually registered transversely of the box to form a pair and each pair being positioned so that said finger pressure must be simultaneously applied at interspaced locations of the box so as to make sliding apart of the parts child-resistant.

4,126,225

POULTRY CONTAINER

William C. Hyland, Monterey, and Elmer G. Swanson, Salinas, both of Calif., assignors to Champion International Corporation, Stamford, Conn.

Filed Jun. 27, 1977, Ser. No. 810,041
Int. Cl.[2] B65D *5/54*
U.S. Cl. 206—607 **2 Claims**



1. A poultry container formed from a single blank of wax saturated paperboard material adhesively joined along a joint comprising:

two parallel side walls;

two parallel end walls integral with and disposed perpendicular to said side walls, said end walls and side walls each including an inwardly folded bottom flap to provide said container with a closed base portion, said end walls including a drain aperture to permit drainage of excess water from the poultry out of the container;

first and second inwardly folded upright side flaps each being hingedly connected along a fold line to one of said side walls, said closure flaps each having a pair of spaced, parallel perforated lines extending through each of said side flaps from an upper edge of the side flap to the fold line connecting the side flap to its respective side wall, said perforated lines dividing each side flap into a central portion disposed between two smaller lateral portions;

first and second inwardly foldable end flaps, each being integral with and hingedly connected to one of said end walls, each of said end flaps including a first and second body portion, said body portions being divided by a fold line, such that said first body portions may be folded against said second body portions to provide each end flap with a two-ply construction, said side flaps being folded over said end flaps to close the container;

a pair of clothing straps disposed around the container, each of said straps being parallel with and disposed outside of one of the perforated lines on the side flaps, each of said straps being closely adjacent to one of the perforated lines on the side flaps such that each strap serves as a cutting edge whereby the central portions of said side flaps may be opened along the perforated lines thereon to permit inspection of the poultry contained within the container; and

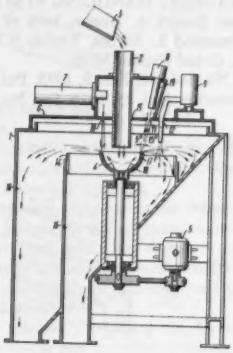
two pairs of spaced parallel slits, disposed along the fold line between one of said side flaps and the side wall connected thereto, said pairs of slits being spaced a distance approximately equal to the space between said closing straps, said slits of each pair of slits being spaced a distance approximately equal to the width of one of said closing straps that each strap may be retained in its proper position by one of said pairs of slits.

4,126,226

ORE SEPARATOR

Mark B. Bello, ulitsa Savushkina, 24, kv. 28; Jury P. Gittemeier, Zanevsky prospekt, 43, kv. 43; Nikolai I. Komyak, Kostromskoi prospekt, 22, kv. 71; Anatoly I. Levitin, Zheleznovodskaya ulitsa, 40, kv. 71; Valery I. Stolin, prospekt Raevskogo, 12, kv. 44; Semen P. Frumkin, Kubinskaya ulitsa, 34, kv. 11, all of, Leningrad; Viktor S. Vijunnik, ulitsa Lenina, 44, kv. 11, Mirny Yakutskoi ASSR; Anatoly B. Leites, ulitsa Lenina, 27, kv. 16, Mirny Yakutskoi ASSR; Jury V. Lyakhov, ulitsa Lenina, 21, kv. 6, Mirny Yakutskoi ASSR; Vladlen V. Novikov, ulitsa Akademika Pavlova, 14, kv. 20, Mirny Yakutskoi ASSR; Felix A. Patsiansky, ulitsa 40 Let Oktyabrya, 4, kv. 1, Mirny Yakutskoi ASSR; Alexandr I. Semyanov, ulitsa Lenina, 21, kv. 5, Mirny Yakutskoi ASSR, and Nikolai M. Yaroshevich, ulitsa Lenina, 8, kv. 20, Mirny Yakutskoi ASSR, all of U.S.S.R.

Filed Dec. 28, 1976, Ser. No. 755,038
Int. Cl.[2] B07C *5/346;* B65G *31/00*
U.S. Cl. 209—589 5 Claims



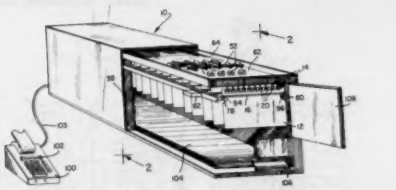
1. An ore separator comprising: a housing; a charging means securely mounted on said housing; a means for transferring and arranging the feed in a layer one grain thick, said transferring and arranging means being made as a bowl rotatably mounted within said housing under said charging means; a drive for rotation of sad bowl mechanically associated with said bowl; a vertical annular partition arranged around said bowl and dividing the interior of the housing into coaxially disposed compartments for separation products; a horizontal light-insulating partition arranged in said housing above said bowl; at least two X-ray tubes mounted on said horizontal light-insulating partition over the area of feeding the ore to expose the ore to radiation; photo-electric means disposed on said horizontal light-insulated partion in a region where X-ray luminescence can be received from feed grains which have received X-ray radiation; air ejector means arranged on said horizontal light-insulating partition over and along the path of travel of the feed grains opposite said vertical partition, said ejector means being electrically connected to said photoelectric means and acting upon the luminescent feed grains; said horizontal light-insulating partition being formed with respective slots for the passage of X-ray radiation from said X-ray tubes onto the feed grains, for the passage of X-ray luminescence from the feed grains onto said photo-electric means, and for the passage of air pulses from said ejector means onto the luminescent feed grains, and said horizontal partition being provided with an opening for receiving said charging means.

4,126,227

RECORD FILING SYSTEM

Renato S. Leon, 116 S. Waldinger, Valley Stream, N.Y. 11580

Continuation-in-part of Ser. No. 587,103, Jun. 16, 1975, abandoned. This application Dec. 27, 1976, Ser. No. 754,354
Int. Cl.[2] B07C *5/12*
U.S. Cl. 209—611 20 Claims



1. A record filing assembly comprising in combination:

a stationary support member,

a plurality of elongated file element selecting members mounted in a horizontal row on said support member and depending therefrom,

a plurality of file elements mounted in alignment in a horizontal row beneath said support member, each of said file elements having a series of holding portions arranged in a row along its upper end, with said holding portions representing progressive binary values, each of said elements having an individual assigned number, each of said holding portions having an "ON" location at one side thereof and an "OFF" location at the other side thereof, and holding means overlying the "OFF" location of those holding portions whose binary values are included in the assigned number of an element, and overlying the "ON" locations of the remainder of the holding portions on said element,

each of said element selecting members extending through the holding portions of each of said file elements having the same binary value,

each of said element selecting members including a pair of opposed retaining portions and being actuatable for alternative movement to a first actuated position in which one retaining portion underlies said "ON" location and the other retaining portion is clear of the "OFF" location, and a second actuated position in which said one retaining portion is clear of said "ON" location and the other retaining portion underlies said "OFF" location, said file element selecting members further comprising plurality of bar hooks each having a vertically extending body member and said opposed retaining portions comprising first and second support arms projecting horizontally from said body member, with said body member being rockably supported to said support member, and actuating means for moving all of said element selecting members simultaneously in a selected sequence in which at least one selecting member is moved to the first actuated position and the remaining members are moved to the second actuated position whereby to release one file element whose assigned number corresponds to said sequence.

4,126,228

BICYCLE RACK WITH LOCK

Lawrence G. Bala, 680 Gravinstien Hwy. N., Sebastopol, Calif., and Ernie G. Bala, 691 Parkview Cir., Pacifica, Calif. 94044

Filed Nov. 30, 1972, Ser. No. 310,923
Int. Cl.[2] B62H *3/08*
U.S. Cl. 211—5 11 Claims

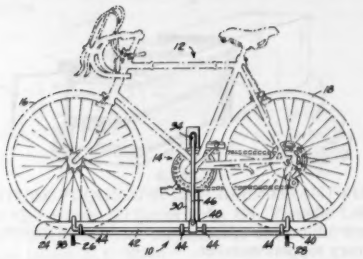
1. A combined support and lock assembly for bicycles, said assembly comprising:

a base member including substantially U-shaped upwardly opening channel means to receive the wheels of a bicycle;

support means extending upward from said base member for

engaging the frame of said bicycle at one side thereof to hold same in an upright position;

latch means comprising a plurality of interconnected arms pivoted to the other side of said channel from said support means and operative to extend across the open trough of said channel to simultaneously latch both wheels of said bicycle in said channel means;



said latch means further including an arm for extending across a portion of said frame and cooperative with said support means for latching the frame of said bicycle to said base member simultaneously with latching said wheels in said channels; and

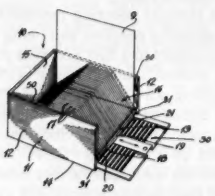
lock means operatively connected for locking said latch means in said latched position.

4,126,229

RECORD ORGANIZER

Alan Sheres, 155 Deguire, Apt. 211, Ville St. Laurent, Montreal, Quebec, Canada

Filed Sep. 20, 1977, Ser. No. 834,869
Int. Cl.[2] A47G *79/00*
U.S. Cl. 211—40 **3 Claims**



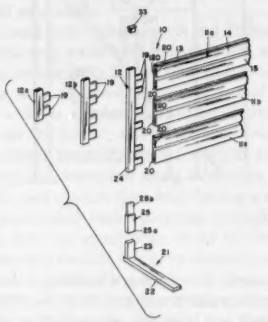
1. An organizer device for storage, retrieval and replacement of closely spaced flat plate-like articles of substantially like-shape but of different content, said device comprising in combination a support frame having opposed vertical side walls, a base wall transversely between a bottom edge of said side walls, and a back wall; a plurality of closely spaced retention rods extending between two substantially parallel spaced-apart securing rods securing between said side walls above said base wall, said retention rods extending angularly upwards across said securing rods a sufficient height to retain said articles between adjacent retention rods; an identification code having a plurality of markings each of which is associated with a respective gap between adjacent ones of said retention rods to identify the location of said articles; and an information storage tray slidingly supported under said base wall between said side walls, said tray having a substantially flat plate having two longitudinal recessed sections, opposed inwardly turned side edges defining a retaining slot above an upper surface of each said recessed sections, an elevated section extending centrally and parallel to said side edges and defining recesses facing a respective slot in each said edges, grip means in a front marginal area to insert and retract said plate from between opposed channels provided in said side walls; a plurality of flexible information carrying members held in substantially parallel alignment and extending transversely across an associated one of said recessed sections, said flexible members being capable of flexing transverse to their longitudinal axes by applying axial pushing force from an end thereof, said information carrying members each having a thickness in at least opposed end portions thereof sufficient for frictional retention between said retaining slot and recess while permitting sliding displacement therealong, said information carrying members each being provided with retention means to hold an information strip carrying information to identify an associated one of said articles in relation to a specific marking in said identification code.

4,126,230

DOCUMENT HANDLING SYSTEM

George F. Tyson; Robert A. Keeler, both of Grand Rapids, Mich., and Raymond L. Myers, Vestal, N.Y., assignors to Steelcase Inc., Grand Rapids, Mich.

Division of Ser. No. 546,280, Feb. 3, 1975, Pat. No. 4,034,864.
This application Aug. 25, 1976, Ser. No. 717,520
Int. Cl.[2] A47F *5/00*
U.S. Cl. 211—50 **14 Claims**



1. In a manual paper handling system for processing and handling paper comprising a support structure presenting a vertical support panel means for handling a plurality of trays therein; a plurality of trays, said trays and support structure having cooperative mounting means for permitting easy, removable hanging of said trays on said support panel; the improvement comprising:

said support panel including a plurality of horizontally oriented slat members mounted one above the other; said slat members each having at least one horizontally extending recess in its front face, said recess extending rearwardly and downwardly of the front surfaces of said slat members to form a hook receiving structure for supporting said trays; said trays each having at least one hook receivable within said hook receiving structure; vertical support means on each end of said slats and each vertical support means having a surface facing one of the ends of said slats, means projecting from said surfaces toward said ends of said slats, at least a portion of said projecting means extending in a plane generally parallel to said front face of said slats, each of the ends of said slats having means receiving said projecting means and cooperating with said projecting means to mount the slats on said vertical support means.

4,126,231

STORAGE UNIT

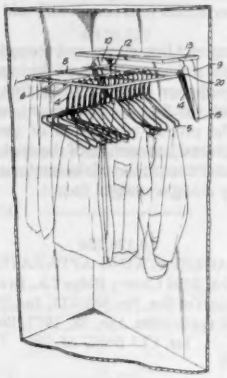
Keith Derwent-Wryde, 13 Graham Rd., Purley, Surrey, England

Filed Nov. 19, 1975, Ser. No. 633,224

Claims priority, application United Kingdom, Nov. 23, 1974, 50825/74

Int. Cl.[2] A47F 5/08

U.S. Cl. 211—99 2 Claims



1. A storage unit comprising

a support means,

a movable, substantially rectangular frame supported by the support means and movable thereon between an extended position and a lowered position,

a central member extending across the frame,

means to carry hangers at spaced locations on said member, and operative both when the frame is in its extended position and in its lowered position, to support the hangers so that they depend from, and are spaced from one another on, said member,

stay means for releasably retaining the frame substantially horizontal, when in said extended position; and

retaining means provided on the support means for retaining the frame, when in said lowered position, at an acute angle to the vertical, the arrangement being such that items stored on the hangers are disposed in spaced, horizontal registry to be readily accessible, when the frame is in its extended position, and are positioned in inclined, overlapping relation so as to occupy a lesser space, when the frame is in its lower position,

said support means being provided with a pair of spaced, pivoted stays, and

said frame having lugs protruding from opposite sides thereof slidably into apertures provided in said stays, the stays and lugs constituting said means for retaining the frame in an extended position.

4,126,232

ELECTRICAL SWITCHBOARD APPARATUS WITH INTEGRAL TRAVELING LIFTING MECHANISM

Thomas M. Orawiec, Florissant, Mo., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 2, 1977, Ser. No. 802,929

Int. Cl.[2] B66C 17/06

U.S. Cl. 212—11 6 Claims

1. Transportable electrical switchboard apparatus, comprising:

a switchboard comprising a plurality of cells arranged over the face of said switchboard and adapted to receive a horizontally insertable circuit interrupter;

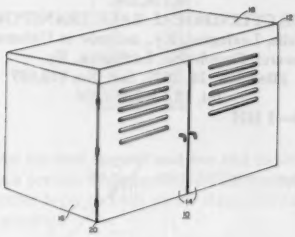
a transportable enclosure disposed around said switchboard and defining a maintenance area between the front of said cells and an interior wall of said enclosure;

a first support rail horizontally mounted upon said switchboard and parallel to the frontal surface of said cells;

a second support rail horizontally mounted across the inner surface of said enclosure interior wall and parallel to said first support rail; and

a lifting mechanism disposed within said enclosure comprising:

a horizontal perimeter frame,



a plurality of movable frame support members mounted upon said frame and positioned to rest upon said first and second support rails,

a winch,

a cable attached to said winch, and

a rotatable cable support member mounted upon said frame and located between said first and second support rails, whereby said cable hangs between said support rails, whereby said enclosure, said lifting means and said switchboard are transportable as a unit.

4,126,233

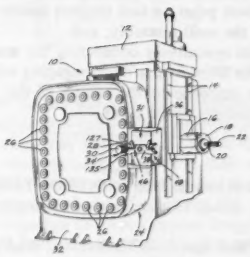
TOOL TRANSFER MECHANISM FOR MACHINE TOOLS

Richard G. Jeske, Hales Corners, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Mar. 3, 1977, Ser. No. 773,905

Int. Cl.[2] B23Q 3/157

U.S. Cl. 214—1 BB 9 Claims



1. In an article transfer mechanism;

a frame;

an article transfer arm movably carried by said frame for transferring articles to and away from an article support, said article transfer arm having at least one grip for gripping the articles during the article transfer operation, said grip comprising:

a fixed jaw;

a movable jaw shiftable to a closed position for cooperating with said fixed jaw to grip an article between them, said movable jaw being also shiftable to an open position to release the article between said jaws;

a clamp arm secured to said movable jaw for shifting said movable jaw between its open and closed positions;

a first abutment on said article support to engage and actuate said clamp arm for shifting said movable jaw toward its

open position when said transfer arm is moving an article into said article support; and

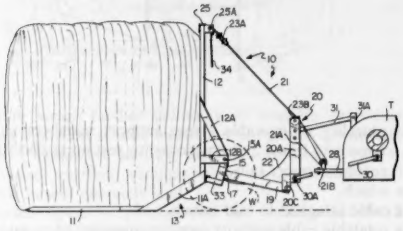
a second abutment on said article support to engage and actuate said clamp arm for shifting said movable jaw to its closed position into gripping engagement with the article when said transfer arm is moving toward an article in said support.

4,126,234

LARGE CYLINDRICAL BALE TRANSPORTER

Larry G. Wells, Lexington, Ky., assignor to University of Kentucky Research Foundation, Lexington, Ky.

Filed Jun. 28, 1977, Ser. No. 810,887
Int. Cl.[2] B60P *1/04*
U.S. Cl. 214—1 HH **10 Claims**



1. An apparatus for transporting bales comprising:

an axle for rotatably positioning ground engaging wheels;

bale engaging means for releasably retaining a bale;

said bale engaging means being pivotally connected to a rigid support means extending from said axle;

a mast assembly being adapted to be connected to a three-point hitch of a tractor;

said axle further including rigid members which are firmly affixed to the axle at one end thereof and pivotally connected to said mast assembly at the other end thereof;

first means operatively connecting the bale engaging means to the mast assembly for pivoting the bale engaging means about a pivot point on said support means in response to raising of the mast assembly; and

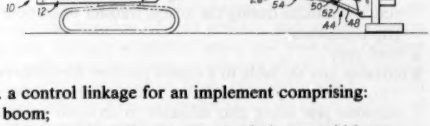
second means operatively connecting the mast assembly to said axle for lifting said ground engaging wheels above the ground in response to the raising of the mast assembly above a predetermined point.

4,126,235

TREE HARVESTER CONTROL LINKAGE

Leon A. Wirt, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 5, 1977, Ser. No. 784,877
Int. Cl.[2] B66C *1/68*
U.S. Cl. 214—3 **4 Claims**



1. a control linkage for an implement comprising:

a boom;

a stick arm pivotally connected relative to said boom;

first cylinder means interconnecting said boom and stick arm for selectively pivoting the stick arm relative to the boom;

strut means comprising a first strut pivotally connected relative to the boom, and a second strut pivotally connected relative to the stick arm, extending ends of the first and second struts being pivotally secured together;

an implement pivotally connected relative to an extended endd of the stick arm;

link means comprising a first link pivotally connected relative to the stick arm adjacent the extended end thereof, and a second link pivotally connected relative to the implement, extending ends of the first and second links being pivotally secured together; and

second cylinder means interconnecting said strut means and link means;

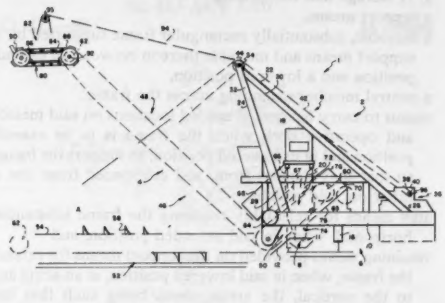
said strut means and link means and second cylinder means providing that a chosen attitude of the implement is generally maintained upon actuation of the first cylinder means, wherein, with the first cylinder means substantially fully extended, the pivotal connection of the first strut and boom, the pivotal connection of the stick arm and boom, and the pivotal connection of the implement and stick arm lie generally along a straight line.

4,126,236

BACKSTACKING APPARATUS

Edward D. Schultz, 2306 Cherry Ridge La., Brandon, Fla. 33511

Continuation-in-part of Ser. No. 588,423, Jun. 19, 1975, Pat. No. 4,018,323. This application Apr. 18, 1977, Ser. No. 788,140
Int. Cl.[2] B65G *65/28*
U.S. Cl. 214—10 **4 Claims**



1. A backstacking apparatus for stacking and reclaiming bulk particulate material comprising a particulate handling means operatively supported above a supporting surface by a movable positioning means, said particulate handling means comprising boom means including a first boom member configured to operatively support a rake means and rake drive means, said rake drive means coupled to said rake means to selectively move said rake means in a first or second direction relative to said first boom member, said movable positioning means comprising a base supported on the supporting surface by roller means and a boom hoist means operatively mounted on said base means, said base means further including feed hopper means to supply particulate material to said backstacking apparatus, said boom hoist means coupled to said boom means to selectively control said first boom member vertically relative to the supporting surface such that said rake means when operatively driven in the first direction moves particulate material outwardly from said base for stacking in a stacking zone and when said rake means is driven in said second direction the particulate material is drawn inwardly to said base to move said particulate materials from the stacking zone to a loading zone, said backstacking apparatus further including a dust enclosure disposed about the inner portion of said boom means and wherein said feed hopper includes a control gate having a first and second position, said dust enclosure comprising an upper and lower wall, said upper and lower walls including a first and second loading aperture respectively, said lower wall further including a loading gate having first and

second positions to selectively open or close said second loading aperture such that particulate material is fed through said hopper to the stacking zone when said control gate is in said second position and said loading gate is in said first position, and particulate material is fed through said hopper to the loading zone when said control gate and said loading gate are both in said second position, particulate material being fed from the stacking zone to the loading zone when said loading gate is in said second position.

4,126,237

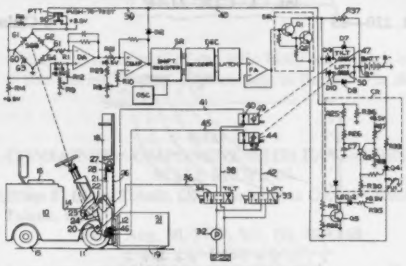
LIFT TRUCK SAFETY SYSTEM HAVING PROTECTION AGAINST COMPONENT FAILURE

Terry R. Downing, Hazel Crest, Ill., and Allois F. Geiersbach, Milwaukee, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 666,045, Mar. 11, 1976, abandoned. This application Apr. 20, 1977, Ser. No. 789,193

Int. Cl.[2] B66F *9/20*

U.S. Cl. 214—674 **20 Claims**



1. In a lift truck having a tilting mast, a mast tilting motor, a load supporting carriage, a carriage elevating motor for raising and lowering said carriage on said mast, overload protective means including sensor means for deriving an electrical tilting-moment signal proportional to the tilting moment acting on the truck as a result of a load on the raised carriage, comparator means for deriving an overload signal when said tilting-moment signal reaches a predetermined magnitude indicative of an overload on said truck, an electrical switch coupled to the output of said comparator means and normally being held unoperated by said output and being operable in response to said overload signal, means for disabling said carriage elevating and mast tilting motors in response to operation of said electrical switch, and crowbar circuit means coupled to the output of said comparator means and to said electrical switch for operating said disabling means in response to: (a) said overload signal, plus (b) said electrical switch remaining unoperated after a preset time delay subsequent to the occurrence of said overload signal, whereby the carriage of an overload truck cannot be shifted in a direction to increase the tilting moment in the event said overload protective means does not respond properly to an overload.

4,126,238

PACKING CONTAINER

Hans A. Rausing, Lund, Sweden, assignor to Tetra Pak Developpement SA, Lausanne, Switzerland

Filed Jan. 24, 1977, Ser. No. 762,136

Claims priority, application Switzerland, Feb. 9, 1976, 1558/76

Int. Cl.[2] B65D *23/00*

U.S. Cl. 215—1 C **6 Claims**

1. A bottle shaped container having a cylindrical body portion and a bottleneck portion comprising: an integral plastic wall having a base layer of a heat shrinkable foam plastic material and an outer layer of a substantially non-heat shrinkable homogeneous plastic material secured to the base layer and having a thickness of not more than about 10% of the thickness of the base layer, said bottleneck portion having substantially parallel surface pleats formed on the outside thereof by heat shrinking one end of a cylinder of the base

layer to cause the base layer at said one end to shrink to form the bottleneck portion while causing the substantially non-heat shrinkable outer layer to form pleats about the outside of the bottleneck portion.

4,126,239

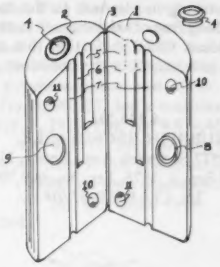
CANISTER FOR AQUEOUS GEL EXPLOSIVE PRIMER

Neil E. Gehrig, Westwood Hills, Kans.; Fred Broussard, Bridge City, and Frank J. Barborek, Orange, both of Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Dec. 5, 1977, Ser. No. 857,542

Int. Cl.[2] B65D *1/04*

U.S. Cl. 215—6 **3 Claims**



1. A canister for an aqueous gel explosive primer which comprises a pair of semi-cylindrical plastic bottles joined by an integral hinge along one longitudinal edge of each bottle, said bottles having corresponding grooves in their mating flat longitudinal surfaces so that when the flat surfaces are brought together to form a cylindrical structure the corresponding grooves come together to form a central longitudinal tubular passage through the canister and one or more cylindrical cavities in close proximity to said central longitudinal tubular passage.

4,126,240

TAMPER INDICATING CLOSURE

Ulrich Brach, Zell (Mosel)., Fed. Rep. of Germany, assignor to Zeller Plastik, Zell, Mosel, Fed. Rep. of Germany

Filed Jul. 12, 1976, Ser. No. 704,340

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1975, 2530699

Int. Cl.[2] B65D *41/34*

U.S. Cl. 215—252 **10 Claims**

1. In combination, a container and a resealable closure therefor,

(a) said container having a threaded neck portion,

(b) said closure comprising:

(1) a cylindrical cap with internal threads for engagement

with, and movement along, the threads on the container,

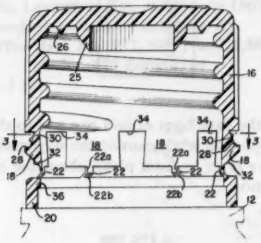
(2) a plurality of spaced tongues depending below the cap,

(3) a tamper-indicating ring,

(4) a plurality of thin webs connecting the tongues to the ring,

(5) said cap, tongues, webs and ring being integrally formed as a unitary, resilient plastic molding,

(c) said webs being sheared to separate the ring from the tongues as the cap is threaded onto the container,



(d) said tongues entering and expanding the ring until the ring is interlocked with the tongues as the cap is threaded downwardly into sealing engagement with the container,

(e) said interlocked ring and tongues being radially expanded by the threads on the neck of the container as the cap is unscrewed from its sealing engagement with the container,

(f) said ring fracturing in response to the radial expansion thereof and falling free of said tongues to expose same and thereby provide a visual indication that an attempt has been made to gain access to the container.

4,126,241

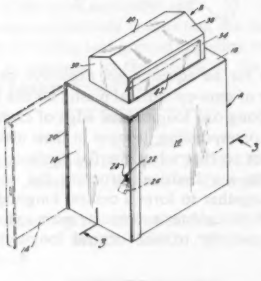
RUBBISH RECEPTACLE

Lawrence Klosk, 3977 Sedgwick Ave., Bronx, N.Y. 10463

Filed Sep. 2, 1975, Ser. No. 609,703

Int. Cl.[2] B65D *51/04*

U.S. Cl. 220—1 T **15 Claims**



1. A receptacle comprising a housing adapted to receive rubbish or the like, said housing having a rubbish receiving portion and a rubbish retaining portion, said rubbish containing portion comprising a box-like enclosure with an opening on the top surface thereof, the periphery of said opening being substantially smaller than the periphery of said top surface of said enclosure, said rubbish receiving portion comprising a plurality of walls, at least two of which are substantially upstanding with respect to said top surface, the lower portions of said walls being mounted on the top surface of said enclosure at the peripheries of said opening so that a portion of said top surface forms a ledge surrounding said rubbish receiving portion, one of said upstanding walls having an aperture, a door articulately mounted on said one wall and movable between a substantially vertical position, such that said aperture is closed, and a non-vertical position within said rubbish receiving portion exposing said aperture, means for limiting the inward movement of said door to said non-vertical position and for biasing said door towards said vertical position and means for preventing door movement outwardly of said rubbish receiving portion relative to said wall beyond said vertical position, said movement limiting and biasing means and said movement preventing means cooperating to prevent the former from impeding the free flow of rubbish through said aperture and into said opening.

4,126,242

HYDROGEN-OCCLUDING ALLOY

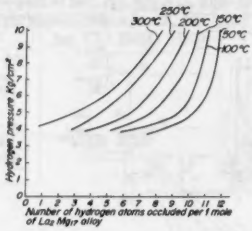
Seishi Yajima; Hideo Kayano, both of Oharai, and Hideo Toma, Kobe, all of Japan, assignors to The Research Institute for Iron, Steel and Other Metals of the Tohoku University, Japan

Continuation of Ser. No. 594,047, Jul. 8, 1975, abandoned. This application Mar. 3, 1977, Ser. No. 774,034

Claims priority, application Japan, Jul. 16, 1974, 49-81342; May 19, 1975, 50-58733

Int. Cl.[2] C22C *23/00*

U.S. Cl. 220—83 **4 Claims**



1. In a container adapted for containing hydrogen therein having at least one wall for the retention of hydrogen, the improvement comprising said wall being made of an alloy having an improved hydrogen occlusion capacity, said alloy consisting of 5.5–25 atomic % of at least one element selected from rare-earth elements and the remainder of magnesium, said rare-earth elements being selected from the group consisting of lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, cadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, scandium and yttrium.

4,126,243

TANK FLOATING ROOF SEAL

Robert A. Bruening, Naperville, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Oct. 11, 1977, Ser. No. 840,548

Int. Cl.[2] B65D *87/20*

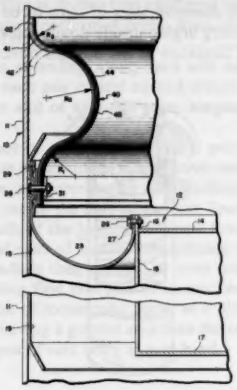
U.S. Cl. 220—224 **4 Claims**

1. In a liquid storage tank having a floating roof, a plurality of shoes adapted to slidably contact the inner side wall of the tank, and means supported by the roof for pressing the shoes against the inner side wall, the improvement comprising:

an elastomeric body composite strip, impermeable to vapor, in the form of an annulus connected at its bottom edge portion by an essentially vapor tight joint to the top circumference of the shoes and its top edge portion in movable sealing contact with the tank inner side wall, said strip in radial vertical cross section being convexly arced when viewed from the roof, and

the strip comprising a plurality of flexible resilient elongated stiffeners laterally positioned and embedded in the body of elastomeric material and extending from the bottom of the strip joined to the shoes to ends which terminate substan-

tially short of the top edge of the strip thereby providing a strip having an upper portion more flexible and less stiff



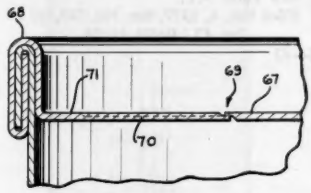
than the remainder of the strip body and which can flex 180° during vertical displacement of the shoes in the tank.

4,126,244

CONTAINER COMPONENT WITH EASY-OPENING WALL SECTION

William F. Elser, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 30, 1977, Ser. No. 829,165
Int. Cl.² B65D *41/32*
U.S. Cl. 220—268 **30 Claims**



1. A container component with a wall section having means imparting a selectively weakened fracturable zone therein for providing a means of opening said wall section in response to manually exerted force against said fracturable zone, said means including a pair of laterally interspaced channels respectively defined in oppositely facing major sides of said wall section, said channels respectively having bottom surfaces disposed in substantially lateral planar alignment and cooperating to define a selectively weakened plane of fracture reaching between said bottom surfaces in substantially parallel orientational relationship with said oppositely facing major sides and along which to selectively fracture and provide and opening in said wall section in response to manually exerted force applied against said fracturable zone.

4,126,245

PULL TAB TOPS FOR SEALED CONTAINERS

John J. Baroody, 58 Oak St., Geneva, N.Y. 14456

Filed Oct. 3, 1977, Ser. No. 838,992
Int. Cl.² B65D *41/32*
U.S. Cl. 220—279 **4 Claims**

1. In combination with a container having a circular opening bounded by a circular rim and closed by a tearable circular lid sealed to said rim at the outer periphery thereof by gum or adhesive;

a tear tab or string secured to the bottom of said lid intermediate said lid and said rim and having a free end first section protuding from beyond said lid; said tab being arranged on said lid so as to provide tearing of preselected

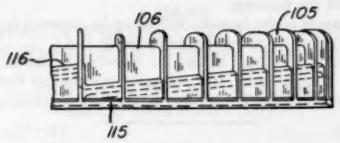
portions when a pulling force is applied to said free end in a direction away from said container and substantially perpendicular to said rim, with said tear tab substantially bounding the said preselected portion of the lid that is to be torn from the container, in which a second section of said tab is arranged between said lid and said rim, along the circular path of the rim.

4,126,246

PLASTIC LIDS AND PAILS

Herbert W. Galer, Pine Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 758,379, Jan. 5, 1977, and a continuation-in-part of Ser. No. 563,262, Feb. 28, 1978, Pat. No. 4,034,886, and a continuation-in-part of Ser. No. 563,272, Mar. 28, 1975, Pat. No. 3,998,355, and a continuation-in-part of Ser. No. 564,944, Apr. 3, 1975, Pat. No. 4,014,452. This application Apr. 4, 1977, Ser. No. 784,494
The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.
Int. Cl.² B65D *7/44*
U.S. Cl. 220—304 **3 Claims**



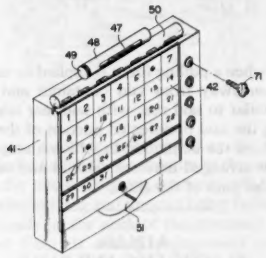
1. In the combination of a stiff molded plastic lid, a compressible gasket and an open-head pail, said lid having a central closing portion and an inverted U-shaped rim, the outer wall of said rim including means for engagement with said open-head pail and the interior of said rim being dimensioned to receive said compressible gasket, said means for engagement being disposed to effect a seal by compression of said gasket between the upper rim of said pail and the interior of the inverted U-shaped rim in said lid, said pail having engagement means in its upper section mated with those of said lid, said combination being assembled to effect a tight seal by compression of said gasket between the upper rim of said pail and the interior of the inverted U-shaped rim in said lid, the improvement comprising an inverted U-shaped portion adjacent to said rim, said portion extending above the central closing portion and ending below the outer wall forming the arch of said rim, said inverted portion forming a support for a pail when said pail is positioned on said lid, and a plurality of thin upstanding members radially disposed about the periphery of said rim and extending up-

wardly above the wall forming the arch of said inverted U and outwardly from the outer wall of the rim in the region of said arch, said members having a length to thickness ratio sufficient to allow deflection of said members without substantial deflection of said rim, the number and spacing of said members being sufficient to position them close enough to each other relative to the curvature of said rim so that impact forces directed to said rim are absorbed and dissipated by said members to reduce substantially the intensity of force per unit area transmitted to the seal through said rim.

4,126,247
PILL DISPENSER

Anthony Majka, 28 S. Marion Pl., Rockville Centre, N.Y. 11570

Filed Oct. 14, 1977, Ser. No. 842,084
Int. Cl.[2] G07F *11/00*
U.S. Cl. 221—2 **2 Claims**



1. A pill dispenser for dispensing daily medication, prestored for a month, said pill dispenser comprising

an upright housing having a transparent side;

a plurality of compartments positioned in rows and columns in upright arrangement in the housing, next-adjacent the transparent side, each column representing a day of the week and each row representing a week of a month, each compartment being adapted to store a day's medication;

calendar marking means in the transparent side of the housing labelling each compartment as a different day of the month;

an opening formed through the bottom of the transparent side of the housing;

chute means in the housing extending in common from each of the compartments to the opening; and

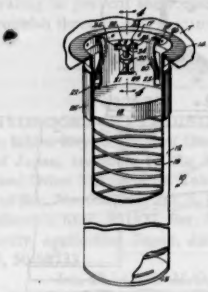
key-operated control means for maintaining medication in each compartment and releasing medication from a selected compartment to the opening upon operation.

4,126,248
ADJUSTABLE CUP DISPENSER

Bruce F. House, Miami, Fla. assignor to Shelley Manufacturing Company, Division of Alco Foodservice Equipment, Miami, Fla.

Continuation-in-part of Ser. No. 642,783, Dec. 22, 1975, Pat. No. 4,033,478. This application Jul. 5, 1977, Ser. No. 813,084
Int. Cl.[2] B65H *31/20*
U.S. Cl. 221—241 **6 Claims**

1. An adjustable self service dispenser for disposable paper cups and the like comprising, in combination, a vertically-extending, open-top container, a plurality of arcuate leaf springs arranged within the upper end of said container in radially-inwardly-extending, downwardly-directed disposition, means for securing the upper ends of said springs with respect to the upper end of said container in peripherally-spaced relation thereabout, a plurality of side openings in said container, one for each of said leaf springs, the lower ends of said arcuate leaf springs extending one each through said side openings an adjusting sleeve circumjacent said container and slidably movable with respect thereto over the zone of said container side openings, the lower ends of said leaf springs each being secured to inner portions of said sleeve, means for adjusting the axial position of said sleeve relative to said container to change the degree of flexure of said springs to accommodate different diameter sizes of cups to be dispensed, and means for resiliently urging upside-down, stacked, frusto-conical cups in said container in the upward direction so that the

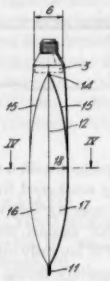


peripheral lower end of the uppermost cup of the stack contacts underside portions of said arcuate leaf springs, said leaf springs being of such size and so positioned at the upper end of said container that the uppermost cup of the stack will project outwardly of the upper end of said container for convenient grasping for removal during a self service cup dispensing operation.

4,126,249
COLLAPSIBLE TUBES

George D. Wood, Feltham, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Feb. 4, 1977, Ser. No. 765,489
Int. Cl.[2] B65D *35/08*
U.S. Cl. 222—92 **4 Claims**



1. A collapsible tube comprising:

(a) a tubular body of flexible plastics material, said body having a longitudinal axis and including a closed end portion terminating in a flat seam extending traversely of said longitudinal axis;

(b) a head arranged adjacent to an opposite end portion of said body and having a reclosable opening through which any contents in said body are dispensible; and

(c) a skirt interconnecting said head and body, said skirt having a major axis and a minor axis in mutually perpendicular relation, said skirt having a narrower side substantially parallel to said minor axis and a wider side substantially parallel to said major axis, said major axis extending in substantially parallel alignment with said flat seam,

said body including a first pair of longitudinally extending preformed crease lines, one said crease line extending on

each said narrower side of said body, said crease lines extending from either end of said flat seam longitudinally to said skirt,

said body further including two additional pairs of longitudinally extending preformed crease lines, the crease lines of said two additional pairs being curved, one pair of curved crease lines extending along each said narrower side of said body, each pair of said curved crease lines extending from either end of said flat seam longitudinally to said skirt,

the crease lines of each said additional pair of crease lines extending on either side of a respective one of the first said crease lines and intersecting one another as well as the respective one of the first said crease lines at each of the opposite ends of the latter said crease lines,

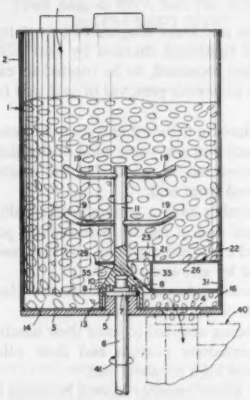
said additional pairs of crease lines defining, at a location on said body where they are spaced most remote from their corresponding first said pair of crease lines, a transverse cross-section of rectangular form, in a filled-condition of said body, having a greater area than the transverse cross-sectional area of said body at said head.

4,126,250

APPARATUS FOR DISPENSING GRANULAR MATERIAL

Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark

Filed Feb. 8, 1977, Ser. No. 766,591
Claims priority, application Denmark, Feb. 26, 1976, 829/76
Int. Cl.[2] G01F *11/44*
U.S. Cl. 222—242 **2 Claims**



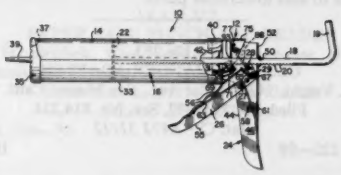
1. An apparatus for dispensing granular material having a tendency to form lumps, comprising; an upright cylindrical container having a bottom wall in which an outlet opening for the material to be dispensed is provided, at least one vane having a front surface extending parallel to the central axis of said container, means secured to an inner end of said vane for disposing said vane above said bottom wall and for rotating said vane about said central axis in one direction so as to sweep over said bottom wall at least at the area of said outlet opening and to push the material toward said outlet opening, a guide baffle structure having a predetermined circumferential extent secured to an inner peripheral wall of said container and lying above said vane, said structure having a bottom surface facing said bottom wall and including a first portion lying parallel to said bottom wall so as to define an area of constant crosssection of a height permitting passage of said vane therethrough with a small clearance during rotation of said vane, said bottom surface further including a second portion which is connected to said first portion by a transition portion disposed above said outlet opening, said second portion sloping away from said bottom wall in a direction opposite said one direction.

4,126,251

CALKING GUN PRESSURE RELEASE MECHANISM

Norbert A. Subwick, Richmond Heights, Ohio, assignor to Chester E. Borys, Orland Park, Ill.

Filed Jan. 14, 1977, Ser. No. 759,501
Int. Cl.[2] B67D *5/42*
U.S. Cl. 222—326 **8 Claims**



1. In a calking gun having means mounted on frame means for receiving a calking material containing cartridge tube and having piston means movably mounted on said frame means for applying pressure to said tube for dispensing calking material therefrom and ratchet means for advancing selectively and releasably said piston means, said piston means including a piston rod having ratchet teeth therein, said ratchet means including a pawl and a latching dog for engaging said ratchet teeth, a pressure release mechanism, comprising:

lever means pivotally mounted near said latching dog for contacting it and moving it out of engagement with said teeth to free said piston rod;

a pair of portions of said frame means;

a pair of spaced-apart reversely-bent channel-shaped portions pivotally attaching and forming a part of said lever means to said pair of portions of said frame means; and

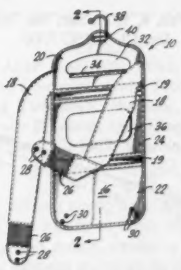
manually operable means connected to said lever and adapted to be grasped by the user for moving pivotally said lever to cause it to move in turn said latching dog and thus to free said rod, said manually operable means including at least one outwardly extending tab connected to one of said channel-shaped portions and depending therefrom.

4,126,252

FOLDABLE GARMENT SUPPORT FRAME

Arnold S. Wasserman, 826 Cheltenham, Santa Barbara, Calif. 93105

Filed Jun. 14, 1977, Ser. No. 806,436
Int. Cl.[2] A47J *51/097, 51/10*
U.S. Cl. 223—87 **34 Claims**

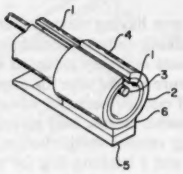


1. A foldable garment support frame comprising:

a body comprising a plurality of vertically aligned panels disposed in substantially coplanar relationship with one another, said body having at least an uppermost panel and a lowermost panel,

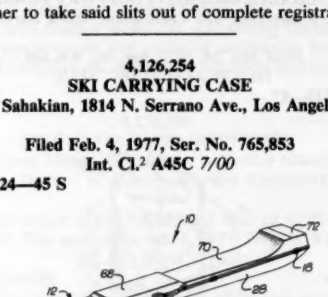
said uppermost panel including a shoulder portion adapted to conformably support the shoulder portions of a jacket-like garment;
hinged connection means for joining adjacent panels together and enabling said adjacent panels to fold together in face-to-face relationship;
a pair of elongated arms each having one end attached to said uppermost panel and an opposite free end adapted for insertion through a sleeve on said jacket-like garment; and
fastening means for releasably securing said free ends of said arms to said lowermost panel.

4,126,253
CLOTHES HANGER ADAPTER
Larry A. Voight, 142 W. 41st Ave., San Mateo, Calif. 94403
Filed Jul. 11, 1977, Ser. No. 814,224
Int. Cl.[2] A47J *51/12*
U.S. Cl. 223—98 **10 Claims**



1. A clothes hanger adapter for a clothes hanger comprising:
(a) a first elongated hollow tube having a longitudinal slit therein for receiving the portion of said clothes hanger which supports clothes such that said portion is interior of and generally parallel to said first tube, and
(b) at least one second hollow tube substantially equal in inside dimensions to the outside dimensions of said first tube also having a longitudinal slit axially receiving said first tube such that said slits are parallel and said first tube is rotatable about said second tube so as to selectively place said slots into and out of complete registry, *w* hereby said clothes hanger portion which supports clothes may be inserted into said first and second tubes when said slits are reigstered and whereby removal is prevented when said first and second tubes are rotated relative to one another to take said slits out of complete registration.

4,126,254
SKI CARRYING CASE
Albert D. Sahakian, 1814 N. Serrano Ave., Los Angeles, Calif. 90027
Filed Feb. 4, 1977, Ser. No. 765,853
Int. Cl.[2] A45C *7/00*
U.S. Cl. 224—45 S **1 Claim**

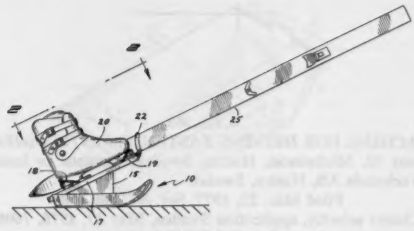


1. A carrying case for skis and related equipment, comprising:
first and second molded plastic case forming members, having a high-strength-to-weight ratio, elongated with respect to ski length and having a width adapted to receive a pair of skis juxtaposed with their bottoms on substantially the same supporting levels,
said members being hinged along one side in the elongated direction so as to be pivotal into open and closed positions,
clamping means along a side opposite said one side adapted to secure said members together in the closed position,
means in said first member to removably secure said skis juxtaposed therein, and being positioned to be adjacent each of the ends of the skis,
said last means being adjustable horizontally along the ski lengths to accommodate for skis of different lengths,
means in said first member to protectively support said ski bottoms at said levels,
said means to support said ski bottoms being resilient material adapted to be substantially co-extensive with the ski lengths and widths,
said material having an upper convex surface in the elongated direction complementary to the concave curve of the ski bottoms whereby the skis are supported in their normal configuration,
said first member having a forward end to receive the forward curved upwardly extending ends of the skis,
said material being positioned in said forward end to be under and forward of the forward ends of said skis to support and protect the ski ends,
protective ridge means extending in the elongated direction adjacent the bottom of said first member to transversely space said skis when juxtaposed in said first member,
said ridge means extending adjacent each of the ends of the skis and having slots therein for the horizontal adjustment of said means to removably secure said skis,
said means to removably secure said skis including hand tightenable bolts extending upwardly from said slots,
means on the lower ends of said bolts to retain them in said slots,
holding bars on said bolts adapted to be rotated across said ski tops and tightened thereon by said bolts and being adapted, when loosened, to be rotated to extend on said ridge means to permit removal of said skis from said first member,
said members having forward and rearward ends respective to the forward and rearward ends of the skis,
said first member having generally flat walls and an upwardly curved front end,
said second member having generally flat walls, a relatively low rearward end, a raised intermediate portion, and a high forward end, said high end and intermediate portion being spaced by a lower portion,
said second member having space for and clamp means to secure a pair of ski poles therein,
said ski poles being adapted to have their handles positioned in said intermediate portion and their other ends and baskets in said high forward end,
said skis in the lower member having bindings spaced below said handles,
equipment pockets being positioned in said rearward end adapted to extend over the rearward ends of the skis, and
a pocket being positioned in said high forward end above the position of the pole forward ends and forwardly of the baskets,
the pocket being adapted to be above the forward ends of the skis.

4,126,255
SKI BOOT CARRIER
David V. Olson, 324 IDS Tower, Minneapolis, Minn. 55402
Filed Jun. 2, 1977, Ser. No. 802,621
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—45 S **7 Claims**

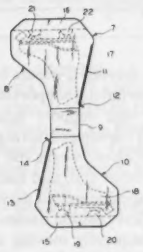
1. A ski boot carrier comprising:
(A) a short longitudinally extending base runner adapted for gliding movement over ice or snow, said runner approximating the length of a ski boot and the width of a pair of ski boots,

(B) a pair of parallel spaced apart support means carried by said runner extending longitudinally and secured thereto,
(C) a pair of parallel spaced apart side-by-side longitudinally extending boot clamping plates each carried by one of said support means and secured thereto,
(D) clamping means on said plates for securing ski boots thereto, and



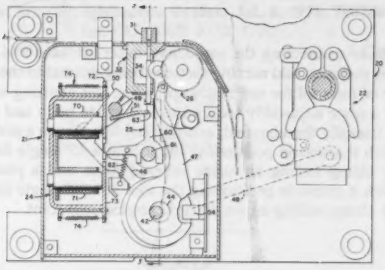
(E) handle means secured to the forward ends of said clamping plates,
said boots when clamped to said clamping plates being spaced apart and adapted to receive the toe ends of a pair of skis in sole-to-sole relation.

4,126,256
CARRIER CASE FOR ICE SKATES, ROLLER SKATES, BOOTS AND SHOES
Jerome McGruder, 9844 S. Merrill, Chicago, Ill. 60617
Filed Aug. 4, 1977, Ser. No. 821,701
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—45 S **5 Claims**



1. An improved carrier case for carrying a pair of roller skates or ice skates or boots or other shoe-like articles comprising a first and second article compartment means for enveloping one each of a pair of said articles, respectively, each of said first and second compartment means being substantially L-shaped to closely approximate and surround the shape of said enveloped article; flexible connection means attached to the top portions of each of the first and second L-shaped compartment means connecting said top portions together, said flexible connection means comprising a substantially soft flexible flat band of material for placement alternately between a user's shoulder and a user's hand and from which said compartment means suspend when carried by said user; each of said two compartment means being attached to said flexible connection means in oppositely facing directions in order to balance the suspended weight of said compartment means and said articles on either side of a transverse axis through both said compartment means and connection means to facilitate handling by said user; article restraint means within the interior and along the bottom portions of each of said compartment means for restrainably maintaining the positions of said respective enveloped articles within said compartment means, each said article restraint means comprising one or more fixture devices in the bottom of said respective compartments, said fixture devices each having a top surface exposed to said article and having one or more indentations therein for snug and aligned receipt of a corresponding complementary portion of the article to be restrained within said compartments; and resealable entry means in each of said compartments for alternately exposing and sealing the interior of each of said compartment means to a user whereby insertion, storage and removal of the respective articles into and from said compartments may be effectively accomplished.

4,126,257
PAPER TAPE PUNCH AND READER
Jacob H. Drillick, Glen Rock, N.J., assignor to Drillick-LaManna Corporation, Hawthorne, N.J.
Filed Mar. 4, 1977, Ser. No. 774,529
Int. Cl.[2] B65H *17/40*
U.S. Cl. 226—76 **3 Claims**

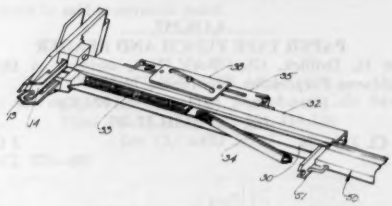


1. A paper tape transport for transforming continuous rotary motion of a drive shaft into selectively intermittent sinusoidal bi-directional movement of the paper tape comprising:
(a) a continuously reciprocating driving link;
(b) a continuously oscillating assembly driven by said link over an arc equivalent to the linear hole spacing on the paper tape;
(c) a selectively energizable magnet mounted on said oscillating assembly;
(d) a pawl mounted on the oscillating assembly and controlled by said magnet, the pawl containing a driving tooth;
(e) a bi-directional driving wheel engageable with said tooth;
(f) a tape transport sprocket operatively connected to said driving wheel and engaging said paper tape; and
(g) means to restrain movement of said sprocket when no signal is received by said magnet to engage said tooth of said armature.

4,126,258
CLAMP NAIL DRIVING TOOL
Charles R. Martin, Cincinnati, Ohio; Francis J. Kramer, Edgewood, Ky., and Thomas E. Warman, Williamsburg, Ohio, assignors to Senco Products, Inc., Cincinnati, Ohio
Filed Aug. 12, 1977, Ser. No. 823,943
Int. Cl.[2] B25C *1/00*
U.S. Cl. 227—8 **9 Claims**

1. In a tool for driving clamp nails into work pieces having a driver element and means to cause said driver element to execute a driving and return stroke, a guide body through which said driver element moves in its stroke, a magazine for holding a stick of clamp nails, said magazine communicating with said guide body, said guide body having an aperture through which clamp nails are fed successively into position to be driven by said driver element; and aperture being configured with a relatively narrower upper portion and a relatively wider lower portion to assure that clamp nails cannot be fed through said aperture upside down, an adjustable rail in said

magazine, whereby said magazine may accept several sizes of clamp nails, said guide body having a nose portion of W shape, the outer surfaces of said W being respectively at an acute angle with respect to the centerline of the tool, so as to fit into an inside corner of a mitered joint to be clamp nailed, the central inner surfaces of said W being respectively at an acute angle with respect to the centerline of the tool but inverted with respect to the outer surfaces of said W so as to fit over an outside corner of a mitered joint to be clamp nailed, narrow



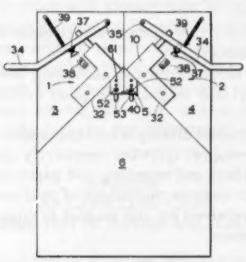
surfaces connecting the respective outer surfaces and central inner surfaces, said narrow surfaces being normal to the centerline of the tool for use in clamp nailing flat abutting surfaces, and a plate adjustably secured to said guide body and extending laterally therebeyond, and adjustable between a position in which it assists in positioning the tool at a 45° angle for properly clamp nailing an inside mitered joint, and a position in which it assists in positioning the tool at a 30° angle for properly clamp nailing an inside right angled butt joint.

4,126,259

FRAME PINNING DEVICE

Edgar Galer, Birmingham, and Paul S. Holt, Bilston, both of England, assignors to E. H. Galer and Co. Limited, Birmingham, England

Filed Jun. 29, 1977, Ser. No. 811,268
Int. Cl.[2] B25C *1/02*
U.S. Cl. 227—30 **8 Claims**



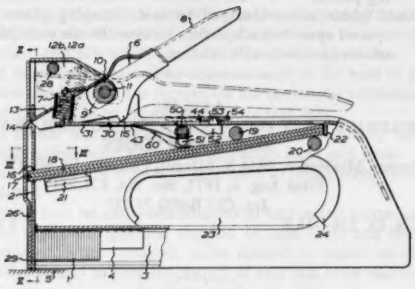
1. A device for pinning a mitred joint between the ends of two lengths of picture frame moulding comprising a support, releasable clamp means mounted on said support for clamping the length in assembled relationship to each other, and two pinning assemblies mounted on said support and arranged to drive pins into the mitred joint at substantially 90° to each other, each pinning assembly comprising a housing provided with a magazine for pins and with a chamber for receiving the pins singly in succession frm said magazine, a reciprocable pin driver slidable in said chamber of said housing, and a hand-operable lever conncted by a mechanical linkage to said pin driver for advancing said pin driver through said chamber, said releasable clamp means comprising a pair of abutment faces extending at 90° to each other and fixed relative to said support, a releasable jaw assembly comprising two jaw members which are slidable on said support in a direction substantially bisecting the angle between said abutment faces and which are slidable relative to each other in that direction, each of said jaw members having a clamping face extending parallel to the corresponding one of said abutment faces, resilient means biasing said jaw members towards said abutment faces, and a further lever connected to said jaw member for retracting said jaw members against said resilient means.

4,126,260

MACHINE FOR DRIVING FASTENERS INTO OBJECTS

Conny O. Mickelsson, Hestra, Sweden, assignor to Isabergs Verkstads AB, Hestra, Sweden

Filed Mar. 22, 1977, Ser. No. 780,108
Claims priority, application Sweden, May 17, 1976, 7605579
Int. Cl.[2] B25C *5/10*
U.S. Cl. 227—132 **5 Claims**



1. In a machine for driving fasteners by an impact blow into an object, said machine having support means, a fastener driver means mounted on said support means for reciprocation thereon, an elongated bar-shaped spring having one end connected to said fastener driver means and being mounted on said support means at the other end, said fastener driver means and said spring being engageable so that movement of said driver in a first direction to a first position causes said spring to bend to store energy for subsequently moving said driver means in a second direction to provide an impact blow to said fastener, the improvement comprising:

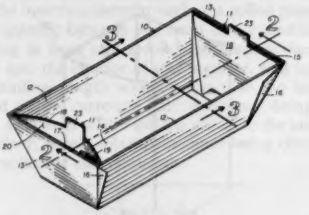
a supplemental support means for said spring, said supplemental support means being movably mounted on said support means for movement from an inoperative position away from said spring to an operative position in which said supplemental support means is engaged by said spring as it is bent to store energy, said supplemental support means and said spring being engageable so that the effective length of said spring is decreased whereby movement of said driver means to said first position will cause said spring to bend to store relatively more energy than when said supplemental support means is in its inoperative position and the effective length of said spring is relatively greater;

said supplemental support means further comprising a bar movably mounted in slots defined by said support means, said bar being perpendicular to the longitudinal axis of said spring, and wedge means movably mounted on said support means, said wedge means positioning said bar in a fixed pre-selected position relative to said spring whereby the amount of energy stored in said spring during bending can be preselected depending upon the position of said bar.

4,126,261
DISPOSABLE FOOD TRAY WITH CONDIMENT CONTAINER

Lon S. Cook, P.O. Box 206, Oroville, Wash. 98844

Filed Oct. 25, 1977, Ser. No. 844,972
Int. Cl.[2] B65D 5/48
U.S. Cl. 229—15 4 Claims



1. A disposable container for simultaneous separated containment of foods and condiments comprising, in combination:

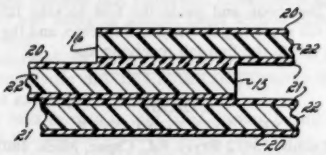
a semi-rigid principal comestible container formed with a bottom structurally joining substantially upwardly extending sides to define a top opening containment space; and

at least one foldable condiment container structurally carried on the inner surface of the upwardly extending sides of the principal comestible container and substantially within the containment space defined thereby, the condiment container having at least one foldable element configured to allow the container to fold into substantial adjacency with the principal comestible container wall but yet be manually openable away therefrom and into the containment space defined by the principal comestible container to define an open top condiment containment space.

4,126,262
ALL-PLASTIC HEAT-SEALABLE CONTAINER MATERIAL AND METHOD OF MAKING

Kenneth P. Thompson, Canton, N.C.; Richard C. Ihde, Strongsville, Ohio, and Clarence E. Roth, Orange, Tex., assignors to Champion International Corporation, Stamford, Conn.

Filed Jul. 2, 1976, Ser. No. 702,018
Int. Cl.[2] B65D 5/72; B32B 3/04
U.S. Cl. 229—17 G 11 Claims

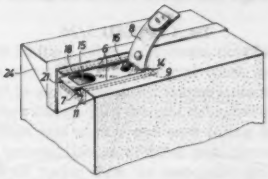


1. A multiple-layer composite blank product in flattened tube form from which containers can be made, said blank comprising a core layer of high density thermoplastic polymeric material having a specific gravity of about 0.950 to about 0.965, a thickness of 15 mils to about 17.5 mils, and a first predetermined softening point, and an outer layer of lower density thermoplastic polymeric material on each side of said core layer, said outer layers having a specific gravity of about 0.918 to about 0.930, a thickness of about 0.75 mils to about 2.0 mils, and a second predetermined softening point lower than said first predetermined softening point such that said outer layers, at unconfined edge portions of said blank, can be dynamically heated to sufficient molten condition for heat sealing while said core layer is not significantly thermally affected and provides structural support for said outer layer without distortion or shrivelling, said blank product being formed by the process of joining the polymeric materials while in molten condition and co-extruding them, and said flattened tube form having a heat-sealed side-seam and being formed by the process of dynamically heating said outer layers at unconfined edge portions of said blank to sufficient molten condition for heat-sealing, and thereafter joining edge portions of said blank together to form said side-seam in predetermined areas wherein said outer layers are molten, said core layer providing, during and after said dynamic heating, the sole structural support for said unconfined molten outer layers.

4,126,263
PACKING CONTAINER PROVIDED WITH OPENING ARRANGEMENT

Kjell H. Martensson, Malmo, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Jun. 21, 1977, Ser. No. 808,689
Claims priority, application Sweden, Jul. 8, 1976, 7607804
Int. Cl.[2] B65D 5/72, 5/70
U.S. Cl. 229—17 R 5 Claims

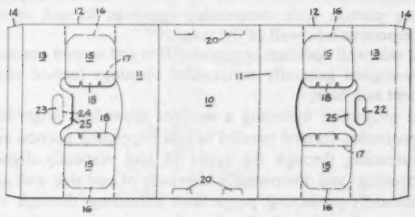


1. A packing container having a wall provided with an opening arrangement comprising a perforated portion in the wall of the packing container which is operable to be lifted so as to free an opening in the container wall, a cover strip attached to the inside of the packing container, fully covering the said perforated portion, sealed to the inside of the packing container around the said opening, and sealed to the inside of the portion of the packing container wall that can be lifted, so that a fusing together of material between parts of the cover strip and parts of the said portion is brought about wherein said cover strip has a sealed-up fold along a side of the cover strip which faces towards said opening, the fold extending over the whole width of the opening and constructed to rise from the container wall when exposed.

4,126,264
CARDBOARD CONTAINER

Manuel Cohen, Buffalo, N.Y., assignor to Wagner Folding Box Corporation, Buffalo, N.Y.

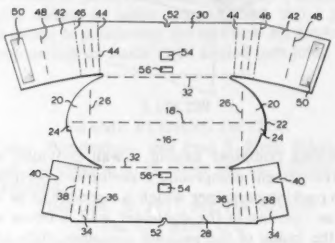
Filed Aug. 25, 1977, Ser. No. 827,613
Int. Cl.[2] B65D 5/48, 5/46
U.S. Cl. 229—27 4 Claims



1. A disposable cardboard carrying case formed from a flat generally rectangular blank and having a pair of longitudinally extending side-by-side compartments, said case having a con-

tinuous bottom wall, integral side walls extending upwardly from each side edge of said bottom wall, integral top walls extending inwardly from the upper edge of each side wall, and medial walls extending downwardly from the inner longitudinal edge of each top wall said top walls having openings therein for access to said compartments, each medial wall having a terminal portion extending horizonally outwardly from its lower edge, each such terminal portion being adhesively secured to said bottom wall.

4,126,265
PRODUCE CONTAINERS
Gordon W. Holmes, Mississauga, Canada, assignor to Professional Packaging Limited, Mississauga, Canada
Filed Jan. 6, 1978, Ser. No. 867,378
Claims priority, application United Kingdom, Jan. 6, 1977, 00443/77
Int. Cl.[2] B65D *5/26*
U.S. Cl. 229—32 **9 Claims**



1. A produce container, comprising

a collapsible tray which has a generally flat planar structure in its collapsed form and has a base, side and end walls upstanding from the base and an open top in its non-collapsed form, said tray being constructed to permit change between its collapsed and non-collapsed forms to be effected without destruction of the integrity of the elements constituting said base and said side and end walls, and

an integrally-formed handle comprising a first elongate portion extending transverse to the open top of the tray and constituting a grip for the handle and first and second elongate depending portions hingedly connected to said first portion one at each end thereof,

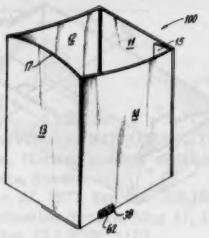
said handle being releasably connected with the side walls of the tray in its non-collapsed form by the interaction of projections formed at the lower end of each said depending portion with cooperating openings formed in the respective side wall of the tray,

said side wall openings comprising first and second vertically-aligned generally rectangular openings formed adjacent said base,

said projection including a resilient dependent finger-like projection formed parallel to said depending portion and extending through the upper of said vertically-aligned openings and downwardly internally of said side wall and inwardly-projecting projections extending through the lower of said vertically-aligned openings in interference relationship with said opening,

said resilient finger-like projection constraining said inwardly-projecting projections from removal from said lower opening.

4,126,266
SELF ERECTING SOAP SCOOP AND BLANK FOR SAME
Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Dec. 5, 1977, Ser. No. 857,097
Int. Cl.[2] B65D *5/10*
U.S. Cl. 229—39 R **4 Claims**



1. A blank for forming a self erecting soap scoop of generally rectangular configuration and tubular shape and having an automatically flattening base portion comprising:

a substantially rectangular sheet of paperboard, said sheet having opposed vertical lateral edges and opposed horizontal top and bottom edges;

four vertically spaced parallel fold lines intermediate the lateral edges thereof defining first and second sidewalls, a front panel, a back panel, and a manufacturer's glue flap positioned at one lateral edge thereof;

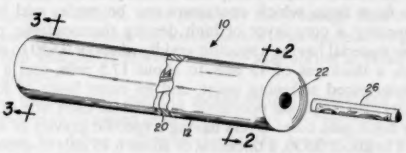
said sidewalls, front panel and back panel having edn closure flaps hingedly connected to the bottom edges thereof along said bottom horizontal edges for forming said base portion, each of said sidewalls including a tab receiving slot along its bottom horizontal edge;

a first elongated locking tab hingedly connected to the first side panel closure flap, said locking tab having a camming surface which extends from the free edge of said first locking tab and terminates in a first locking notch;

a second elongated locking tab hingedly connected to the second side panel closure flap, said second locking tab having a camming surface which extends from the free edge of said second locking tab and terminates in a second locking notch;

whereby when said soap scoop is erected the locking tabs oppose each other and are in close lateral adjacency such that the camming surfaces of each engage and precisely square the scoop and guide the first locking tab to the second tab receiving slot opposed thereto, and the second locking tab to the first tab receiving slot.

4,126,267
SECURITY CONTAINER
George A. Emmie, 13472 Bryce Rd., Capac, Mich. 48014
Filed Nov. 7, 1977, Ser. No. 849,107
Int. Cl.[2] E05G *1/00*
U.S. Cl. 232—4 R **4 Claims**



1. A security container for storing paper currency, said container comprising:

an elongated, tubular member opened at its opposite ends;

first cap means enclosing one end of said member, said cap

means being secured to said one member end in such a manner that its removal from said one member end destroys said container;

a second cap means enclosing the other end of said member, said second cap means being secured to said other member end in such a manner that the removal of said second cap from said member destroys said container; said second cap means having an opening having a diameter sized to permit the insertion therethrough of a rolled paper currency, said opening being in the form of a cylindrical tube extending in from said second cap inner surface longitudinally into the interior of said member, said tube having a longitudinal length which is less than the length of said rolled paper currency, said container being fabricated from a material which inhibits access to the interior of said container, access to said container being obtained by the destruction of said container.

4,126,268

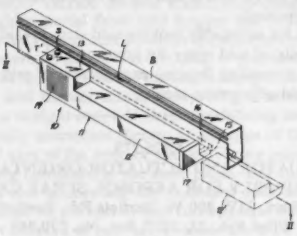
PORTABLE ROOM-TEMPERATURE CONTROLLER

John E. Vitale, 559 Manchester Rd., Yorktown Heights, N.Y. 10598

Filed Feb. 18, 1977, Ser. No. 770,231

Int. Cl.² F24H *3/06*; F28F *13/12*

U.S. Cl. 236—38 **11 Claims**



1. The combination with a fixed heat exchanger, disposed above the floor of a room, of a unit for forcing air through said heat exchanger, said unit comprising:

an elongated housing portably resting on the floor wholly below the air outlet of said heat exchanger, said housing having a large cross-section portion forming an air duct and lying in front of said heat exchanger, and a projection formed on said housing and integral with said large cross-section portion and extending over substantially the entire length thereof, said projection communicating with said duct and being of smaller cross section than said large portion;

an elongated air outlet formed in said projection facing upwardly for directing forced air upwardly through said heat exchanger;

an air inlet formed in said large portion facing away from said heat exchanger for drawing in room air;

means provided in said large portion between said inlet and said elongated outlet for forcing air therethrough; and

a thermostat in said housing connected to said air forcing means and responsive to the temperature of said room for controlling said air forcing means.

4,126,269

VENTILATED ENCLOSURE

Jean-Claude Bruges, Yerres, France, assignor to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull, Paris, France

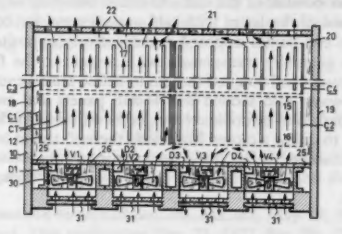
Filed Mar. 9, 1977, Ser. No. 775,789

Claims priority, application France, Mar. 10, 1976, 76 06867

Int. Cl.² F24F *7/00*

U.S. Cl. 236—49 **14 Claims**

1. A ventilated enclosure formed by an air duct, one end of which is closed off by a partition having ventilation apertures and the other end of which is closed off by a wall having openings adapted to provide for the passage of air, at least two fans supported to said wall and adapted to be energized to cause air to be drawn into the interior of the enclosure from its exterior, each said fan including a detection device for detecting inadequate ventilation within the enclosure, each said detecting device being positioned in the area which is swept by the stream of air produced by the associated fan when energized, each said detecting device including means for generating a signal when the output of air from this fan falls below a



predetermined limiting value, said means consisting of a thermal detection element to emit a signal when its temperature becomes equal to a predetermined temperature threshold, and an air non-return casing, said thermal detection element being supported within said casing and said casing being so constructed and arranged so as to have pass through it only a fraction of the air output from the associated fan, said fraction of air being such that, when the output from the fan is equal to the said predetermined limiting value, the temperature which prevails within the casing is equal to the said predetermined threshold.

4,126,270

SOLAR ENERGY COLLECTION SYSTEM

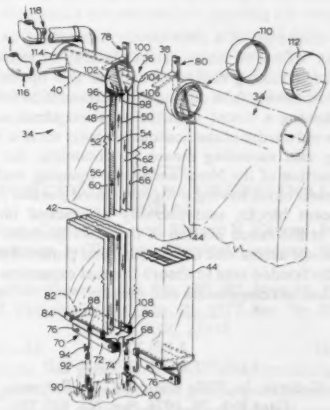
Richard L. Hummel, 87 Boulton Dr., Toronto, Canada (M4V 2V5)

Filed Jan. 21, 1977, Ser. No. 761,187

Claims priority, application United Kingdom, Jan. 23, 1976, 2595/76

Int. Cl.² F24J *3/02*

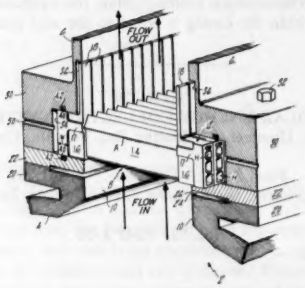
U.S. Cl. 237—1 A **6 Claims**



1. For use in a solar energy collection system, a solar energy collector unit which is of modular form and is adapted to be coupled to a similar unit to form a composite solar energy collector, the unit comprising a plurality of flexible plastic

panels which are adapted to be suspended in upright positions at the exterior of a building, said panels comprising: a first panel which is adapted to absorb solar energy and which constitutes a solar energy absorbent body of the unit, said panel having front and rear surfaces from both of which solar energy absorbed by the body can be transmitted as sensible heat; second and third panels spaced outwardly from the respective front and rear surfaces of the first panel so as to in use define with said first panel passageways in which air can absorb heat transmitted from said body; a fourth panel spaced from said third panel to in use define therewith a passageway forming a return air conduit of the unit and communicating adjacent the lower end of the latter with said passageways for heated air; and two end panels disposed at respectively opposite ends of the unit generally transversely with respect to the first mentioned panels and coupled thereto to define sealed ends for said passageways; said second and fourth panels and end panels being adapted to be connected together adjacent the bottom of the unit to define a closed lower end thereof; and at least those panels intended to be disposed in front of the solar energy absorbent body when the unit is in use being transparent to sunlight.

4,126,271
LASER NOZZLE AND OPTICAL CAVITY WALL CONSTRUCTION
Carl L. C. Kah, Jr., North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed May 5, 1977, Ser. No. 794,168
Int. Cl.[2] B05B *15/00*
U.S. Cl. 239—397.5 **5 Claims**



1. In combination, a laser device comprising an elongated outlet for a flow of lasing gas, a plurality of stacked blocks, means for mounting said blocks across said opening, each of said blocks having (a) a contoured center section for forming a nozzle having a throat with the adjacent block and (b) end portions outwardly of the contoured center section for engagement by said mounting means for mounting the contoured center section of the block across the opening, each end portion of each block having a slightly raised portion for bonding to adjacent blocks, said plurality of stacked blocks being bonded at the raised portion of their end portions to prevent flow leakage across said throat, each end portion being hollow below the bonded area to absorb thermal expansion in bending rather than in compression and tension.

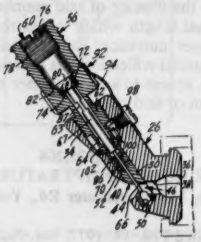
4,126,272
ADJUSTABLE SPRAY TIP
John D. Geberth, Jr., Rifle Camp Rd., W. Paterson, N.J. 07424
Filed Feb. 20, 1976, Ser. No. 659,755
Int. Cl.[2] B05B *1/32*
U.S. Cl. 239—455 **12 Claims**

1. An adjustable spray nozzle for use with a spray gun, said spray gun being adapted for hydraulically atomizing and spraying liquids and including conduit means communicating with a source of liquid under pressure, said adjustable spray nozzle comprising:

(a) a spray tip housing including means for securing said housing to said spray gun;

(b) a fluid bore in said housing communicating with said conduit means and terminating in a spray opening in said housing;

(c) a valve bore in said housing intersecting said fluid bore adjacent said spray opening;

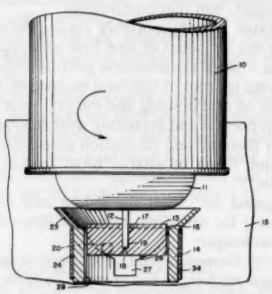


(d) a valve stem including a shank portion adapted for adjustable movement in said valve bore to thereby vary said spray opening;

(e) means for adjustably moving said stem in said valve bore externally of said spray tip housing; and

(f) means providing floating engagement of said valve stem with said adjustment means.

4,126,273
ACTUATOR AND ACTUATOR-ORIENTATOR ASSEMBLY FOR AEROSOL SPRAY CANS
Thomas J. Smrt, 31W 300 W. Bartlett Rd., Bartlett, Ill. 60103
Filed Feb. 22, 1977, Ser. No. 770,840
Int. Cl.[2] B05B *15/06*
U.S. Cl. 239—579 **6 Claims**



1. In a spraying apparatus for spraying the contents of a spray can, an actuator and orientator assembly for orienting the spray can in a desired spraying position comprising:

(a) an orientator having a generally cylindrical wall providing an opening through which the contents of the can are sprayed, a pair of radially outwardly extending recesses in the cylindrical wall for receiving portions of the actuator, and at least one guide surface which extends from each of the recesses in a spiral direction relative to the central axis of the cylindrical wall; and

(b) an actuator having an elongated spraying orifice through which the contents of the spray can are sprayed, the actuator having a body which has a width approximately equal to the diameter of said cylindrical wall of the orientator and a pair of projections which extend from the body and which are engageable with the guide surfaces of the

orientator when the actuator is inserted into the opening of the orientator and which are sized and arranged to be received by the recesses of the orientator for positioning the actuator relative to the orientator.

4,126,274

DEVICE FOR SPREADING DISTRIBUTABLE MATERIAL

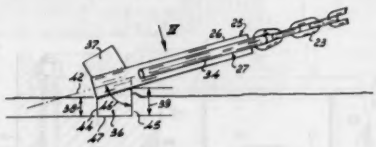
Ary van der Lely, and Cornelis J. G. Bom, both of 10, Weverskade, Maasland, Netherlands

Filed Mar. 3, 1977, Ser. No. 774,218

Claims priority, application Netherlands, Mar. 5, 1976, 7602299

Int. Cl.[2] A01C *3/06*

U.S. Cl. 239—664 **26 Claims**



1. A spreader for distributing material which comprises a frame, a hopper carried on said frame, dispersing means for receiving said material from said hopper and broadcasting it onto the underlying ground, marker means connected to said frame to demarcate the outward bounds of said material which has been so broadcast onto the ground as the spreader is moved over same, said marker means comprising a carrier member comprising a straight rod, a V-shaped stabilizing member with said rod rigidly connected thereto at the apex of the "V," the longitudinal axes of the arms of said stabilizing member and of said rod being contained in the same plane, said rod extending at least to a line connecting the outboard ends of said arms, means mounted on the end of said rod opposite its connection to said arms adapted to provide a visible mark on the ground upon movement of the spreader which is the demarcation between ground which has received said material and ground which has not received said material.

4,126,275

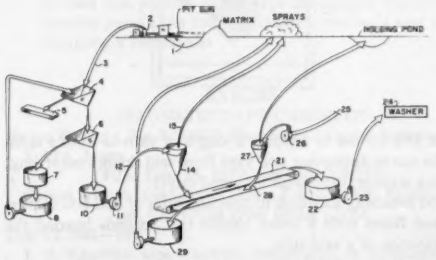
PROCESS FOR SIZING AND DESLIMING OF ORE MATRIX

Richard C. Timberlake, and U. K. Custred, both of Lakeland, Fla., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 18, 1977, Ser. No. 816,430

Int. Cl.[2] B02C *23/10*

U.S. Cl. 241—1 **8 Claims**



1. A method for processing ore matrix containing in addition to desirable mineral values, substantial quantities of contaminating argillaceous material and silica; comprising, the steps of subjecting said matrix at the mining site to a stream of high pressure water to form said matrix into an aqueous matrix slurry which contains from 20% to 30% solids; transporting said slurry by pipeline to an intermediate station in the vicinity of the mining site and while at said station separating plus 3-inch solids from said matrix slurry, reducing the size of essentially all of the remaining minus 3-inch, plus ¾-inch solids in said matrix slurry to minus ¾-inch particle size, subjecting the thus-formed slurry to dewatering and desliming treatment whereby the solids content is increased to at least about 65% solids and aqueous slime is removed which contains no more than about 12% by wt solids and depositing the dewatered deslimed matrix on a continuous belt for transport, transporting the dewatered and deslimed matrix by continuous belt over an extended distance from said station to an ore dressing plant for refining of said mineral values.

4,126,276

PROCESS FOR GRINDING COAL OR ORES IN A LIQUID MEDIUM

Willy Manfroy, Carmel, Ind., and Richard R. Klimpel, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 687,781, May 19, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,732

Int. Cl.[2] B02C *23/18*

U.S. Cl. 241—16 **18 Claims**

1. A process for grinding coal or ores containing metal values comprising carrying out said grinding in the presence of a liquid medium and a polyelectrolyte grinding aid comprising poly N-(sulfoalkyl)acrylamide or poly N-(sulfoalkyl)methacrylamide, copolymers of the same with each other or with other ethylenically unsaturated monomers, said grinding aid being dispersible in said medium, and being employed in an amount effective to provide increased grinding efficiency.

4,126,277

PROCESS FOR GRINDING COAL OR ORES IN A LIQUID MEDIUM

Willy Manfroy, Carmel, Ind., and Richard R. Klimpel, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 687,780, May 19, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,733

Int. Cl.[2] B02C *23/18*

U.S. Cl. 241—16 **16 Claims**

1. A process for grinding coal or ores containing metal values comprising carrying out said grinding in the presence of a liquid medium and a polyelectrolyte grinding aid comprising sulfonated polystyrene or sulfonated polyvinyl toluene, copolymers of the same with each other or with other ethylenically unsaturated monomers, said grinding aid being dispersible in said medium and employed in an amount effective to provide increased grinding efficiency.

4,126,278

PROCESS FOR GRINDING COAL OR ORES IN A LIQUID MEDIUM

Willy Manfroy, Carmel, Ind., and Richard R. Klimpel, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 687,797, May 19, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,736

Int. Cl.[2] B02C *23/18*

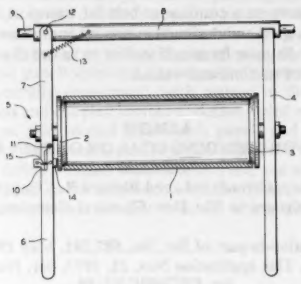
U.S. Cl. 241—16 **14 Claims**

1. A process for grinding coal or ores containing metal values comprising carrying out said grinding in the presence of a liquid medium and a polyelectrolyte grinding aid comprising a polymer of sulfoethylmethacrylic acid or copolymers thereof with other ethylenically unsaturated monomers, said grinding aid being dispersible in said medium and being employed in an amount effective to provide increased grinding efficiency.

4,126,279
WINDING DEVICES FOR SPOOLING YARNS

Gerd Munnekehoff, Remscheid, Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remscheid-Lennepp, Germany

Filed Oct. 6, 1977, Ser. No. 840,040
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1976, 2645220
Int. Cl.[2] B65H *54/42, 49/26*
U.S. Cl. 242—18 DD 4 Claims



1. A winding device for yarns comprising the combination of a two-armed spool holder having first and second arms mounted on a machine frame to pivot about a horizontal axis, said first arm also having pivot means for swinging said first arm toward and away from said second arm, opposed spool holders mounted rotatably on respective arms, whereby an empty spool may be inserted between, or a wound spool may be released from, said opposed spool holders, the improvement wherein said first arm is subdivided into an outer part and an inner part upon which one of said spool holders is mounted, said parts being connected by pivot means which allows said outer part to swing toward the last-mentioned spool holder, and a brake member operatively associated with said outer part to come into braking contact with said last-mentioned spool holder when said outer part is swung toward said last-mentioned spool holder.

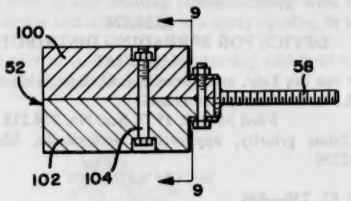
4,126,280
IMPACT CRUSHER

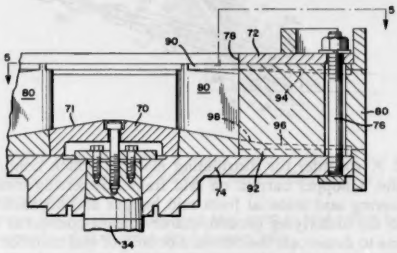
John H. Burk, Pleasant Hill, Calif., assignor to Black Clawson, Inc., Everett, Wash.

Filed Jul. 13, 1977, Ser. No. 815,099
Int. Cl.[2] B02C *13/09*
U.S. Cl. 241—275 13 Claims

1. In a centrifugal rock crusher including a cylindrical housing with a vertically disposed central axis, a plurality of rock crushing anvil means positioned radially around the interior of said housing in a band transverse to said central axis, and impeller means disposed for rotation concentrically within said housing and adapted to throw rock to be crushed against said anvil means, the improvement comprising:

each of said anvil means has at least two anvil members with substantially vertical mating surfaces rigidly secured together, each said anvil means being secured in said housing so that said vertical mating surfaces are disposed in a radial plane of said housing.

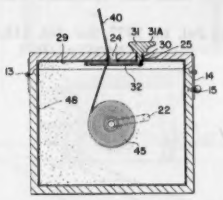




4,126,281
SKEINER

Bernard L. Young, 81 CSG Box 3061, Apo, N.Y. 09755

Filed Mar. 13, 1978, Ser. No. 885,853
Int. Cl.[2] B65H *54/60*
U.S. Cl. 242—53 1 Claim



1. A box for use in winding a length of yarn to form a skein and for use in dispensing said yarn from said skein, comprising,

a box section fitted with a hinged cover,

a rod rotatably mounted to opposed sides of said box section and fitted with a crank handle that extends beyond the exterior of a said side,

a pair of spaced slots mounted in said cover, each oriented parallel to the said rod, with

a guide unit slidably mounted in one of said slots, said guide unit fitted with a closed loop that extends along the underside of said cover across the other of said slots, with a knob slidably mounted in said one slot fixed to said loop, said knob extending above said cover.

4,126,282

SEAT BELT RETRACTING AND WINDING DEVICE

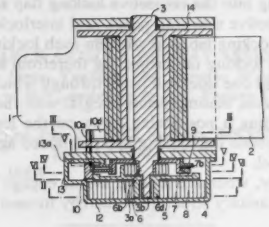
Masayuki Morita, Tokoname; Takashi Kawaharazaki, Ichinomiya, and Toshiaki Shimogawa, Nishio, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jun. 24, 1977, Ser. No. 809,633

Claims priority, application Japan, Jul. 6, 1976, 51-89472[U]; Jul. 15, 1976, 51-94128[U]

Int. Cl.[2] A67B *35/02;* B65H *75/48*

U.S. Cl. 242—107 7 Claims



1. A seat belt retracting and winding device comprising a frame, a winding reel having a shaft, a seat belt wound on said winding reel with the inner end being fixed to said reel, a housing fixed to said frame, and seat belt retracting means disposed in said housing and including means for controlling the retracting force of said seat belt, wherein said seat belt retracting means comprises:

a driving wheel rotatable with the rotation of said shaft,

a ratchet wheel rotatably carried on said shaft,

a catch engageable with said ratchet wheel,

a first spring having one end fixed to said ratchet wheel and the other end fixed to said housing,

a second spring having one end fixed to said driving wheel and the other end fixed to said ratchet wheel,

cam means with a cam portion, said cam means being selectively driven by said driving wheel in such a manner that when the seat belt is paid out, said cam portion is brought to a predetermined position and remains stationary at this position, and when the seat belt is retracted, said cam portion is brought to engage said catch to thereby disengage the latter from said ratchet wheel after a predetermined angular movement, and

catch holding means driven by said driving wheel and being rotatable in a predetermined angular range relative to said housing to control the engagement of said catch with said ratchet wheel in such a manner that when said seat belt is retracted by a predetermined length after it has been paid out to be fastened, said catch engages said ratchet wheel to thereby lock the latter, and when said seat belt is further retracted, said catch is disengaged from said ratchet wheel by said cam portion and is kept disengaged therefrom to thereby permit the rotation thereof until said seat belt is completely retracted.

4,126,283

MAGNETIC TAPE CASSETTE

Kazuo Kawachi, No. 8-1-1020, Funabashi 7-chome, Setagaya-ku, Tokyo, Japan

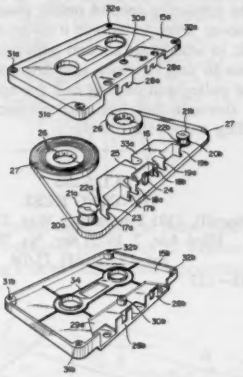
Filed Feb. 16, 1977, Ser. No. 769,267

Claims priority, application Japan, Feb. 23, 1976, 51-20314[U]

Int. Cl.[2] G03B *1/04;* G11B *15/32*

U.S. Cl. 242—199 7 Claims

1. A magnetic tape cassette, comprising in combination a molded upper cassette half, a molded lower cassette half, and a separately molded tape guide assembly sandwiched and fixedly held in place between said upper and lower cassette halves, said upper and lower cassette halves being identical in shape and structure, said cassette halves being symmetrically assembled to each other, said cassette halves and said tape guide assembly mutually compensating for strains and distortions produced therein during injection molding operation and reinforcing one another, to improve the running and azimuth characteristics of a magnetic tape in said cassette, said upper and lower cassette halves being a mere case for containing said separately molded tape guide assembly and a pair of hubs and a tape to be wound from hub to hub, said cassette halves having molded-in surface means for determining the proper posi-



tional relationship between cassette reference faces and openings in the outer surfaces of said cassette halves, on the one hand, and said separately molded tape guide assembly and hubs on the other hand, the path of tape movement between said hubs extending in a straight line from each hub to said separately molded tape guide assembly, said separately molded tape guide assembly having resilient tape engaging means.

4,126,284

MAGNETIC TAPE DRIVE DEVICE

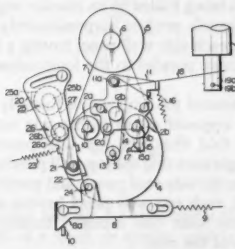
Hiroki Ichikawa, Hachioji; Kazumi Miyazi, Fuchu, and Michio Kusuyama, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1977, Ser. No. 831,130

Claims priority, application Japan, Sep. 9, 1976, 51-121546[U]

Int. Cl.[2] G03B *1/04;* G11B *15/32*

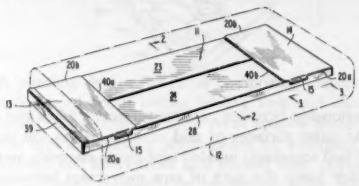
U.S. Cl. 242—201 7 Claims



1. A magnetic tape drive device including a drive shaft for a tape winding reel, a drive shaft for a tape rewinding reel, reel pedestals provided on both the drive shafts, respectively, a drive source for reel pedestal rotation, transmitting means for selectively transmitting a drive force from the drive source to the reel pedestals, and a first operating member for operating said transmitting means, said transmitting means comprising a rotatable changeover lever, a transmission force changeover mechanism mounted on the changeover lever and adapted to selectively contact with the reel pedestals according to the rotation of the changeover lever to transmit a drive force from the drive source to the reel pedestal, and an elastically connect-

ing means for elastically connecting the changeover lever to the first operating member to permit the transmission force changeover mechanism to be elastically contacted with the reel pedestal through the changeover lever according to the operation of the first operating member, said transmission force changeover mechanism including a first pulley rotatably supported on the changeover lever, an endless belt placed between the first pulley and the drive source to permit the first pulley to be rotated, a second pulley rotatably supported on the changeover lever to permit it to be contacted with the endless belt, in which said second pulley is rotated in a direction opposite to that in which said first pulley is rotated, and said second pulley and endless belt are selectively elastically connected through the elastically connecting means to the corresponding reels, respectively.

4,126,285
WINDING REEL
Robert E. Spruill, 4201 Portchester Way, Decatur, Ga. 30034
Filed Apr. 7, 1977, Ser. No. 785,493
Int. Cl.[2] B65H *75/06*
U.S. Cl. 242—222 **3 Claims**



3. A winding reel of relatively stiff material for use as a core comprising:

(a) an elongated rectangular thin parallelepiped box like structure with interconnected top, bottom and side wall panels formed of a single piece of corrugated material with integral end flaps having locking flaps affixed thereto,

(b) the bottom panel having a pair of opposed side edges, first and second side wall panels foldably attaches to said bottom panel along respective fold lines to the opposed side edges, the first and second side wall panels having a pair of opposed side edges spaced from and parallel to the respective side edges of the bottom wall panel, the side wall panels being folded to an interior angle such that the side wall panels project perpendicularly to the bottom wall panel, each side wall panel having a locking flap slot therein located parallel to the longitudinal center line of the reel,

(c) first and second top wall panels foldably attached to the respective opposed edges of the side wall panels along respective fold lines, the top wall panels folded to an interior angle such that the top wall panels project perpendicularly to the side wall panels and parallel to the bottom wall panel, each top wall panel having an edge lying in juxtaposition with one another forming a longitudinal center line of the reel,

(d) each of said top wall panel edges having a central web stiffening member attached thereto, each of said central web stiffening members being folded inwardly to project perpendicularly to the bottom wall panel and to lie adjacent thereto providing a predetermined spacing between the top wall panels and the bottom wall panel and serving to reinforce the reel against crushing forces applied perpendicularly to the reel,

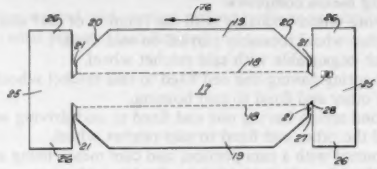
(e) first and second end flaps having a proximal edge, a distal edge and opposed side edges, each end flap being foldably connected at the proximal edge thereof to a respective end edge of the bottom wall panel, each end flap having an end panel formed therein of such dimensions as to overlie the space confined within an area defined by the interconnected top, a portion of the end flap further overlying and being in juxtaposition with the top wall panels,

(f) the corrugations of the corrugated material being aligned with the longitudinal center line of the reel as formed by the edges of the top wall panels lying in juxtaposition with one another,

(g) the opposed side edges of each end flap having locking means engaging with the locking flap slot, wherein the locking means comprise at least one locking flap to engage the locking flap slot, said locking flap being folded and projecting into the respective locking flap slot located in the respective side wall panel, said interlock means comprises a locking tab, and wherein each locking flap has at least one locking tab projecting therefrom and interlocking against one side wall panel through which the locking flap projects, biasing means integral with the locking flap slot exerting a positioning force on the locking flap to thereby retain the locking flap positioned against the side wall panel,

(h) whereby, when the locking means engage the side wall panels a unitary structure is thereby formed.

4,126,286
END CAP FOR CLOTH REEL
Richard G. Dunn, Greensboro, N.C., assignor to The Real-Reel Corporation, East Providence, R.I.
Filed Aug. 18, 1977, Ser. No. 825,664
Int. Cl.[2] B65H *75/06*
U.S. Cl. 242—222 **4 Claims**



1. In a cloth reel a body having opposite sides with a longitudinal dimension and a transverse dimension with edges between said sides along the longitudinal dimension and ends between said sides along the transverse dimension, an end cap extending about an end portion of the reel and comprising a front wall along the reel end, side walls integral with the front wall and extending at right angles to the front wall along said opposite sides of the reel, end walls integral with said front wall and extending in a curvature at right angles to the front wall along the reel edges, said end walls having integral flaps extending from opposite sides of the end wall on arcs from the end walls and located along the side walls in a lapping relation therewith and with the arcuate portion projecting transversely of the reel beyond the side walls of the end caps to present a rounded smooth surface corner portion for the reel.

4,126,287
FLEXIBLE ELECTROMAGNETIC SHIELD COMPRISING INTERLACED GLASSY ALLOY FILAMENTS
Lewis I. Mendelsohn, Swampscott, Mass., and Ethan A. Nesbitt, Beach Haven, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.
Continuation-in-part of Ser. No. 663,172, Mar. 2, 1976, Pat. No. 4,030,892. This application Jun. 9, 1977, Ser. No. 805,060
The portion of the term of this patent subsequent to Jun. 21, 1994, has been disclaimed.
Int. Cl.[2] B21F *21/00*
U.S. Cl. 245—8 **17 Claims**

1. A flexible electromagnetic shield which comprises interlaced filaments, said filaments comprising at least one metal alloy that is primarily glassy, said at least one metal alloy

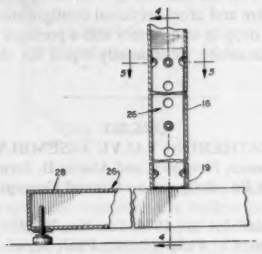
consisting essentially of about 75 to 87 atom percent of at least one metal selected from the group consisting of iron and cobalt, up to about three-fourths of which may be replaced by nickel, and the balance at least one metalloid selected from the group consisting of boron, carbon and phosphorus, up to about one-third of which may be replaced by at least one element selected from the group consisting of silicon and aluminum, plus incidental impurities, and having a maximum permeability of at least about 25,000 and a coercivity of less than about 0.08 Oe.

4,126,288

PORTABLE ARTICLE DISPLAY ASSEMBLY

Frank A. De Sisto, Yonkers, and Rosario D'Agrosa, Dobbs Ferry, both of N.Y., assignors to J. C. Penney Co., Inc., New York, N.Y.

Filed Jun. 20, 1977, Ser. No. 808,342
Int. Cl.[2] F16M *11/20*
U.S. Cl. 248—188.1 **3 Claims**



1. A portable article display assembly comprises display frame means defined at least by a pair of support members adapted to be mounted in spaced-apart, vertical orientation, each of said support members having a rectangular channel within at least its end length and a coextensive opening in the end communicating with said channel; and means for supporting said display means on a supporting surface, said supporting means including a pair of supporting members, and retaining means carried by and substantially centrally of each said supporting member, said retaining means including a pair of rectangular plate elements extending parallel to one another, perpendicular to said supporting member and spaced by a distance whereby the outer surfaces when said display frame means is received on said supporting means are closely juxtaposed to one pair of opposite internal walls of said channel, each said plate element in elevation having an elongated major dimension which is less than the length of said channel and a plurality of ears extending from opposite sides of each plate element to increase effectively its minor dimension, said display frame means received releasably on said supporting means by slidably inserting said retaining means into said channel whereby said ears on each said plate element both firmly and frictionally engage the other pair of opposite internal walls of said channel to militate against wobbling and/or rattling of said display assembly.

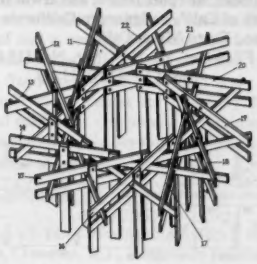
4,126,289

MODULAR SUPPORT

David B. Uhlig, P.O. Box 99532, Pacific Beach, Calif. 92109

Filed Jun. 8, 1977, Ser. No. 804,779
Int. Cl.[2] A47B *3/06*
U.S. Cl. 248—188.1 **3 Claims**

1. An article of manufacture comprising a base composed of interengaging modular units, each of said modular units comprising a pair of spaced vertical supporting members, a pair of spaced horizontal members attached to said vertical members at the upper ends thereof, thereby forming a slot therebetween, an additional horizontal member to fit such slot attached to a vertical member at a point between the said pair of horizontal members and extending in a direction opposite that of the pair of slot forming members, all of the members of each of the



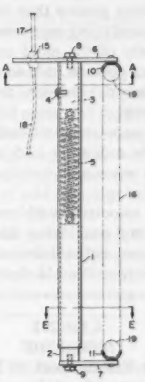
modular units being in the same vertical plane, said additional horizontal member engaging the slot of an adjacent modular unit, thereby forming a three dimensional supporting structure.

4,126,290

RADIO ANTENNA BRACKET

Gordon E. Drouillard, 205 Lesperance Rd., Windsor, Ontario, Canada (N8N 1W2)

Filed Jun. 16, 1977, Ser. No. 807,334
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—226.1 **1 Claim**

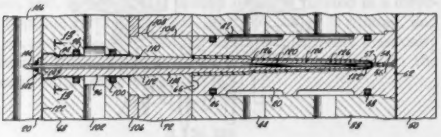


1. A radio antenna bracket for attachment to the rear-view mirror of the cab of a truck or similar vehicle, comprising a longitudinal tube having a fixed plug in the upper end thereof; a sliding rod inserted in the bottom end thereof; a spring within the tube which joins the said sliding rod to the upper plug; a narrow horizontal upper plate attached to the top of the plug and extending a short distance on each side of said tube; a hole in one end of the upper plate for attaching an antenna thereto; a narrow plate, bent into a semicircle attached to the other end of said upper plate; a short, bottom plate, fixed to the bottom of the sliding rod, extending to one side only of said tube, and having at the end thereof attached a semicircular plate identical with the semicircular plate fixed to the upper plate, in line with it, and said semicircular plates toeing towards each other, so as to clamp between them by stretching the said spring, the bracket of said rear-view mirror.

4,126,291
INJECTION MOLD FOR ELONGATED, HOLLOW ARTICLES

Russell T. Gilbert, Newport Beach, and Irwin B. Pfau, Fountain Valley, both of Calif., assignors to California Injection Molding Co., Inc., Costa Mesa, Calif.

Filed Oct. 18, 1974, Ser. No. 515,818
Int. Cl.[2] B29D *23/02*
U.S. Cl. 249—63 **14 Claims**



1. Apparatus for molding elongated thin wall articles comprising

a first mold part having a cavity formed therein with a length several times greater than its maximum cross-sectional dimension,

a second mold part movably connected to said first mold part,

means operatively associated with said mold parts for moving said first and second mold parts between mold open and mold closed positions, and

an elongated rigid core mounted at one end thereof in said second mole part and movable therewith from said mold open position wherein the said core is withdrawn from said cavity, to said mold closed position wherein said core is symmetrically positioned within said cavity to define therewith a thin elongated annular cavity space for reception of injected molding material, said core having a length several times greater than its maximum cross-sectional dimension and being supported by said second mold part independently of the mold cavity when said mold parts are in closed position, said second mold part including first and second relatively movable and mutually connected elements,

means operatively associated with said second mold part for relatively loosely mounting said core in said first and second elements when said mold parts are in open position, and

means operatively associated with one of said elements for rigidly securing and positioning said core with respect to said second element and said second mold part when said mold parts move to said mold closed position.

4,126,292
MOLD DIE

Jun-Ichi Saeki; Aizo Kaneda, both of Yokohama, and Keizo Otsuki, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 28, 1977, Ser. No. 811,141
Claims priority, application Japan, Jul. 5, 1976, 51-78969
Int. Cl.[2] B29F *1/00*
U.S. Cl. 249—110 **2 Claims**

1. A mold die comprising:

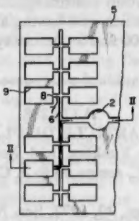
a plurality of cavities;

a pot or sprue for supplying a molten resin therefrom;

a runner connected at one end thereof to said pot or sprue and extending therefrom toward said cavities so that the cavities are provided along the runner for introducing resin from said pot or sprue to said cavities; and

a plurality of gates branching from said runner and connected to respective cavities, each of said gates having an inlet communicating with the runner and an exit communicating with an associated cavity, and convergent sloping portions extending between the inlet and exit of the respective gates, each of the exits of each of the gates being of the same size and cross-sectional configuration;

said convergent sloping portions of the respective gates having an increasing inclination with an increase in distance of the corresponding cavities from the pot or sprue

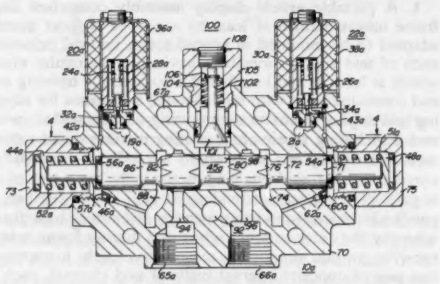


such that with the increasing inclination and the exits of the same size and cross-sectional configuration the sum of a pressure drop in said runner and a pressure drop in each gate is maintained substantially equal for the respective cavities.

4,126,293
FEATHERING VALVE ASSEMBLY

Kenneth W. Zeuner, Newtown, and Alonzo B. Jarman, Wrightstown, both of Pa., assignors to Control Concepts, Inc., Newtown, Pa.

Filed Jul. 16, 1976, Ser. No. 705,920
Int. Cl.[2] F15B *13/043*; F16K *31/42*
U.S. Cl. 251—30 **9 Claims**



1. A feathering valve system for modulating the fluid inflow to a selected one of first and second spool ends of a spool valve assembly having a movable spool comprising:

first and second electrohydraulically operated normally closed pilot valve assemblies respectively having first and second plug means movable between (1) valve normally closed states seating in and closing respective first and second pilot orifices for preventing any substantial flow of fluid through respective first and second pilot orifices and (2) valve open states, said first and second plug means being individually operated and not mechanically connected to each other,

controller means electrically coupled to said pilot valve assemblies for selectively applying a predetermined value electrical signal for actuating one of said assemblies to an open position related to the value of said signal;

pilot source means for applying fluid under a substantially constant pilot pressure under said first and second plug means through said pilot orifices, and

first and second conduit means for providing modulating fluid flow from above the first or second plug means of an actuated valve assembly to a respective spool end tending to close the respective plug means thereby producing

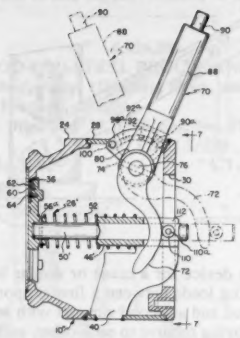
negative feedback, whereby said spool moves to a position which is a function of the actuating signal value.

4,126,294

ADAPTER VALVE MECHANISM FOR TRANSPORTATION TANK

Joseph H. DeFrees, 505 Liberty St., Warren, Pa. 16365

Filed Nov. 20, 1975, Ser. No. 633,629
Int. Cl.[2] F16K *35/02*
U.S. Cl. 251—99 **11 Claims**



1. A fabricated adapter valve adapted for loading of a transportation storage tank comprising, a hollow body portion, a coupling portion secured to one end of said body portion in liquid tight relation, said coupling portion being adapted for coupling to a compatible loading coupler of a loading island for liquids, a coupling flange secured in liquid tight relation to the other end of said body portion, adapted for coupling to a liquid flow conduit to the tank, said flange defining an exit opening adapted for communication with the liquid flow conduit, said coupling portion having a liquid inlet opening therein, said coupling portion comprising a frontal surface disposed generally perpendicular to the axes of said inlet opening and said exit opening, said inlet opening defining a poppet valve seat disposed generally immediately adjacent to the plane of said frontal surface, said body portion comprising an open-ended cylindrical tube and said coupling portion and said flange being secured by welds to said tube at the respective end thereof to form a liquid tight connection therebetween, valve means mounted in said body portion for closing said inlet opening, said valve means including means automatically urging said valve means forwardly toward closed condition in said inlet opening, a spider mounted interiorly of said body portion, said spider comprising spaced generally radially extending arms supporting an elongated sleeve generally centrally of said body portion, said sleeve being secured by welds to said arms, said valve means comprising a poppet movably mounted on said sleeve interiorly of said body portion. And wherein said poppet includes an elongated stem received in sliding guided relation in said sleeve for mounting the poppet in said body portion, each of said arms including a tab on the outer end thereof, said body portion having complementary slots formed therein extending therethrough and receiving therein the respective of said tabs, and means sealing said tabs with respect to said slots to prevent escape of liquid from the interior of said adapter valve during flow therethrough, said sealing means comprising exterior welds securing the tabs to said body portion and sealing the respective slot, and rigidly positioning said spider interiorly of said body portion with said poppet in alignment with said inlet opening, said slots and coacting tabs being disposed forwardly of the connections of said sleeve to said arms with said arms being generally obliquely oriented, in elevation, in said body portion, said poppet including a head having a sealing ring thereon engageable with said poppet seat, and means securing the sealing ring in position on the poppet head, the last mentioned means being located in confronting relation to said plane and being exteriorly accessible from said valve and said inlet opening for convenient replacement of the sealing ring on the poppet head.

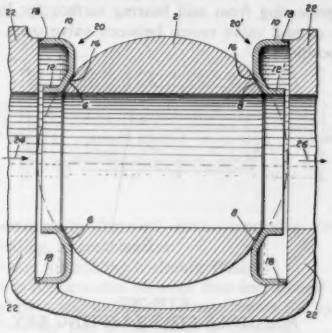
4. A valve in accordance with claim 1 including a manually operable actuator mounted on said body portion and extending interiorly thereof and accessible for actuation from exteriorly thereof, said actuator including means pivotal in said body portion about a fixed point relative to said body portion and coacting with said valve means for manually opening said valve means, and means for selectively maintaining said valve means in open condition while permitting release of said actuator by an operator.

4,126,295

BALL VALVE HAVING METAL SEAT RINGS

Angelo Natalizia, Cranston, R.I., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Sep. 22, 1976, Ser. No. 725,205
Int. Cl.[2] F16K *5/06*
U.S. Cl. 251—315 **19 Claims**



1. A ball and seat assembly for insertion into a top entry valve housing defining inlet and outlet ports and seat engaging surfaces surrounding said ports, and for providing communication with said inlet and outlet ports, comprising:

a ball member having a spherical surface and an internal bore therethrough forming inlet and outlet openings, the periphery of each of said openings being surrounded by a relieved surface portion; and

a first seat having a soft metal coating thereon, said first seat coupled between one of said inlet and outlet ports and said ball member such that said soft metal coating engages the relieved surface portion surrounding one of said openings.

4,126,296

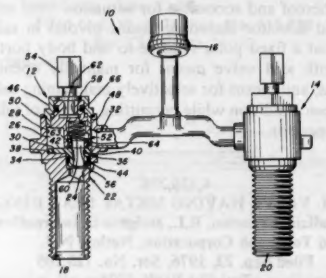
ECCENTRIC FAUCET INSERT

Dimitry V. Skor, 204 Dewey Ave., Morgantown, W. Va. 26505, and John L. Fogle, 5 Allegany St., Lonaconing, Md. 21539

Filed Jan. 26, 1977, Ser. No. 762,580
Int. Cl.[2] F16K *5/14*
U.S. Cl. 251—363 **1 Claim**

1. A valve comprising, a housing enclosing a chamber defined by a bottom wall, a generally cylindrical sidewall, and cover means removably closing the top of said chamber, an outlet in said sidewall, an inlet in said bottom wall, valve means rotatably mounted in said chamber for selectively permitting or blocking the flow of fluid from said inlet to said outlet, closure means mounted on said valve means for movement relative thereto in a direction toward and away from a replaceable seat insert and biased into sealing engagement therewith, a removable, self-contained one piece unitarily molded insert comprising, in combination, a bottom wall liner providing a planar bearing surface for said closure means, an integral cylindrical portion projecting downwardly from said bottom wall

liner substantially into said inlet port to provide a lining in said inlet port, said cylindrical portion having inlet passage means for fluid and seal means between said inlet port and said cylindrical portion, said insert further having integral stop means



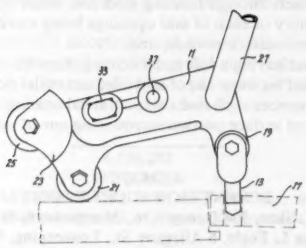
with arcuate surfaces conforming to the shape of said valve means projecting from said bearing surface for limiting the rotation of said valve means between valve open and valve closed positions.

4,126,297

MANHOLE COVER LIFTING KEY

Frederick J. Barnes, 3 Luth Ave., Daglish, Western Australia, Australia

Filed Nov. 17, 1977, Ser. No. 852,357
Int. Cl.² B66F *11/00*
U.S. Cl. 254—131 **8 Claims**



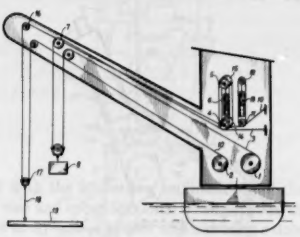
1. A lever for lifting manhole covers comprising a foot, a key adapted to engage a key hole in a manhole cover, said key being pivotally mounted on one end of the foot, a first roller mounted on the foot inwardly of the other end thereof for rotation about an axis transverse to the longitudinal axis of the foot, a second roller mounted on the foot adjacent the other end thereof for rotation about an axis parallel to the axis of rotation of the first roller, the rollers being located relative to each other so that they function as a rolling fulcrum, the first roller functioning initially as a pivot for lifting the manhole cover and the second roller functioning as a trolley to enable the lifted cover to be transported and an operating lever one end of which is connected to the foot adjacent said one end with the lever projecting at an angle therefrom.

4,126,298

COMPENSATION DEVICE FOR A CRANE

Dirk J. C. Lub, Vlaardingen, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed May 3, 1977, Ser. No. 793,435
Claims priority, application Netherlands, May 5, 1976, 7604801
Int. Cl.² B66D *1/48*
U.S. Cl. 254—172 **3 Claims**



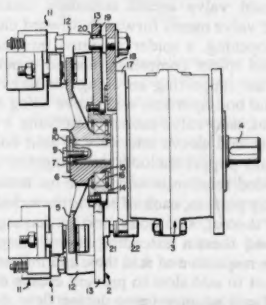
1. Compensation device for a crane or similar hoisting machine for transferring loads between a first support on which the crane is mounted and a second support with said first and second supports moving relative to each other, said compensation device being supported by said first support for movement therewith and comprising a controllable pneumatic main spring, an auxiliary pneumatic spring that is movable independently of said main spring, a load rope trained about said main spring, means for suspending a load from said load rope, a second rope separate from said load rope and trained about both said main spring and said auxiliary spring, and means for releasably connecting said second rope to said second support.

4,126,299

BRAKE AND A CONTROL APPARATUS FOR THE OPENING OF A BRAKE

Henri Dorot, Wattignies, France, assignor to Verlinde S.A., Loos, France

Filed Jun. 14, 1977, Ser. No. 806,477
Claims priority, application France, Jun. 14, 1976, 7618737
Int. Cl.² B66D *1/00*
U.S. Cl. 254—186 R **4 Claims**



1. A brake and apparatus for controlling the opening of the brake primarily for a winch and more particularly for a lifting winch driven hydraulically comprising:

a shaft,

a brake rotor keyed on said shaft, a motor shaft connected to said shaft and constantly urged in rotation in the same direction by the action of a force primarily a traction force due to a charge,

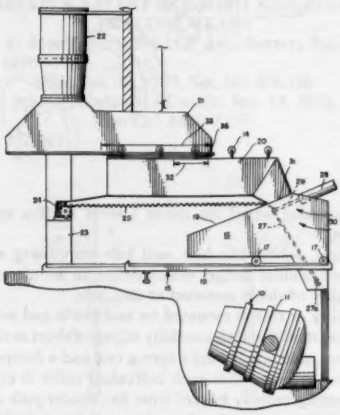
a fixed base, a support on said base for supporting other braking elements of the brake and where said braking elements are fixedly and directly coupled to said support, said support oscillating around said shaft for said rotor, first means for controlling the brake, second means for actuating said first means, said first means being associated with said support and said second means being associated with said fixed base, said support and said base including two spaced stops on one and a finger on the other cooperating with said stops determining the maximum angle of oscillation of said support relative to said fixed base.

4,126,300

HOOD FOR STEEL PROCESSING VESSEL

Henry A. Oberhelman, Hillsboro, Oreg., assignor to Esco Corporation, Portland, Oreg.

Filed Jan. 27, 1978, Ser. No. 872,991
Int. Cl.² C21C 5/38
U.S. Cl. 266—158 **3 Claims**



1. A hood suitable for a steel processing vessel utilizing argon-oxygen decarburization comprising:
a frame flanking and spanning said vessel,
a first hood portion movable horizontally on said frame from a first position overlying said vessel to a second position spaced rearwardly of the vessel for vessel removal,
a second hood portion fixed relative to said frame and coupled to exhaust fan means, slip joint coupling said first and second hood portions together,
a draft damper in the front of said first hood portion movable from a first position for developing generally vertical air flow to a second position or developing generally horizontal air flow, and means on said first hood portion for moving said draft damper.

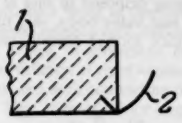
4,126,301

CONTAINERS FOR MOLTEN METAL

Daniel M. Massin, La-Celle-Saint-Cloud, France, assignor to Foseco Trading AG., Chur, Switzerland

Filed Sep. 30, 1977, Ser. No. 838,055
Claims priority, application United Kingdom, Oct. 7, 1976, 41786/76
Int. Cl.² C21C 7/00
U.S. Cl. 266—280 **9 Claims**

1. In a molten metal container including an outer metal casing, an inner expendable lining made up of a plurality of slabs of refractory heat-insulating material, and between the inner expendable lining and the metal casing, a loose fill of particulate material, wherein the improvement comprises
means for sealing at least some of the joints between the slabs forming the expendable lining so that the movement of loose particulate material across the at least some joints is restrained, said means including a leaf seal member



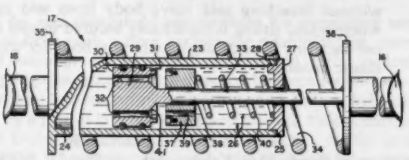
mounted on at least one slab to flex or hinge about or adjacent the jointing edge of the slab nearest the interior of the container.

4,126,302

HORIZONTAL INERTIA-RESPONSIVE SHOCK ABSORBER

Charles R. Curnutt, 75992 Baseline, 29 Palms, Calif. 92277

Filed Jan. 20, 1978, Ser. No. 871,000
Int. Cl.² F16F 9/19
U.S. Cl. 267—8 D **5 Claims**



1. An horizontally disposed inertia-responsive shock absorber, including, in combination:
(a) a cylinder for holding hydraulic fluid;
(b) a piston reciprocable between first and second ends of said cylinder and including passage means for bypassing fluid from one side of the piston to the other;
(c) a piston rod secured to said piston and passing out the second end of the cylinder;
(d) an external spring between the extending end of said piston rod and the first end of said cylinder biasing said piston towards said second end; and
(e) a weight slidably mounted on said piston rod in said cylinder between said piston and said second end, said weight being responsive to acceleration of a vehicle on which said shock absorber is horizontally mounted to move away from said piston and responsive to deceleration of said vehicle to move against said piston to thereby vary the resistance to hydraulic fluid flow from one side of said piston to the other.

4,126,303

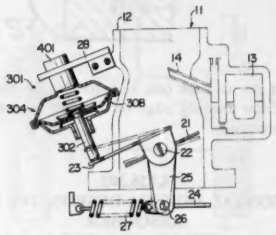
DASHPOT

Syozo Yanagisawa, Tokaimura, and Tomo Itoh, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 11, 1976, Ser. No. 685,534
Claims priority, application Japan, May 16, 1975, 50-57304
Int. Cl.² B60G 11/56
U.S. Cl. 267—34 **9 Claims**

1. In a dashpot including:
(a) a housing;
(b) a diaphragm disposed in said housing;
(c) a diaphragm chamber disposed on one side of said diaphragm;
(d) a valve body connected to said housing on said one side of said diaphragm, said valve body having therethrough at least one metering bore of one cross-sectional dimension for establishing communication between the outside atmosphere and said diaphragm chamber;
(e) a check valve disposed in said valve body;
wherein the improvement comprises:

a detachable fitting of a second cross-sectional dimension smaller than said one cross-sectional dimension of said at least one metering bore through said valve body, said fitting being disposed in said at least one metering bore through said valve body, said fitting having a calibrated bleed orifice formed therein, said fitting further having



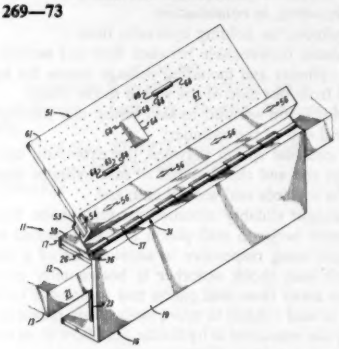
means for securing said fitting in said valve body, and said fitting further having means for detaching said fitting from said at least one metering bore through said valve body without detaching said valve body from said housing, wherein said fitting is detachably secured in said at least one metering bore through said valve body by way of an elastic member.

4,126,304

CIRCUIT BOARD HOLDER

William F. Barck, 82 S. Kalaheo Ave., Kailua, Hi. 96734

Filed Jan. 9, 1978, Ser. No. 868,138
Int. Cl.[2] B25B *1/22*
U.S. Cl. 269—73 **7 Claims**



1. A holder for a perforated circuit board having a mounting side and a soldering side, said holder comprising:

a. a base including an elongated C-shaped in section channel having an upper flange, a web and a lower flange;

b. means for securing said base to a bench or table along an edge thereof;

c. an elongated board-clamping member mounted on said upper flange for pivotal movement between a first upper position and a second lower position;

d. means for clamping the circuit board to said board-clamping member so that the mounting side of the circuit board faces in a substantially upward direction when said board-clamping member is in said first position and the soldering side of the clamping board faces in a substantially upward direction when said board-clamping member is in said second position,

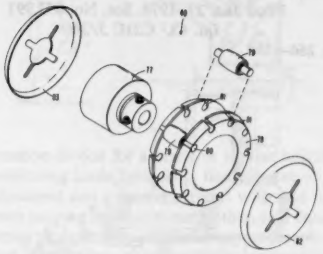
said board-clamping member including a hinge having a hinge pin oriented parallel to the longitudinal dimension of said channel, said hinge further including a first hinge plate and a second hinge plate each relatively movable on said hinge pin, said first hinge plate being mounted on said upper flange of said channel and said second hinge plate being mounted on said board-clamping member.

4,126,305

COMBING WHEEL

Donald F. Colglazier; John L. Fallon; Ernest P. Kollar, all of Longmont, and Fred R. Mares, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1977, Ser. No. 788,574
Int. Cl.[2] B65H *3/06*
U.S. Cl. 271—120 **11 Claims**



3. A combing wheel for use in a sheet feeding apparatus, comprising:

a resilient, rubber-like hub, said hub comprising a pair of spaced annular flanges which define an annular cavity;

a plurality of shafts mounted to said hub;

a plurality of rollers mounted on said shafts and adapted to intermittently and sequentially engage a sheet as the wheel rotates, said hub having a spring rate and a damping coefficient to insure that each individual roller is capable of deflecting radially inward from its circular path as it continuously engages the sheet during its period of intermittent engagement, with a force profile having minimized force variation excursions; and

a pair of end caps surrounding opposite outboard sides of said hub so as to imprison said roller shafts without restricting radial deflection thereof, said end caps defining a circle of smaller radius than the circle occupied by the outermost periphery of said rollers.

4,126,306

FEEDING APPARATUS

Eric G. Hills, London, England, assignor to The Post Office, London, England

Continuation of Ser. No. 721,584, Sep. 8, 1976, abandoned. This application Nov. 18, 1977, Ser. No. 852,682
Claims priority, application United Kingdom, Sep. 12, 1975, 37612/75
Int. Cl.[2] B65H *3/12, 3/52*
U.S. Cl. 271—94 **7 Claims**

1. Feeding apparatus for feeding flat items comprising:

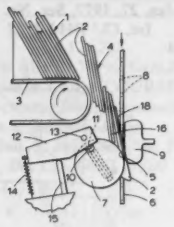
a drive member for driving an item in a feed direction;

a friction member for resisting feeding of the flat item;

the drive member and the friction member being so mounted as to provide a nip and to act on opposite sides of the item with a reaction force between the drive member and the item greater than a reaction force between the friction member and the item; and

said friction member is in the form of a first rotatably mounted sphere whose rotational axis extends askew of

the feeding direction, whereby the friction member frictionally resists passage of the item and whose rotational



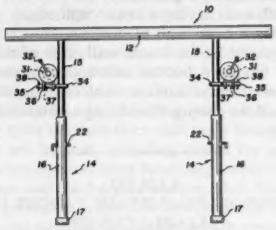
axis is additionally inclined with respect to the tangential plane of the drive member at said nip.

4,126,307

PORTABLE BALLET BAR WITH ADJUSTABLE BRACING MEANS

William F. Stevenson, 13095-14A Ave., Surrey, B.C., Canada (V4A 1H9)

Filed Jun. 15, 1977, Ser. No. 806,740
Claims priority, application Canada, Sep. 13, 1976, 261083
Int. Cl.[2] A63B 1/00
U.S. Cl. 272—62 **4 Claims**



1. A support structure comprising:
a hand rail;
a pair of upright legs connectable to said hand rail to support said rail above a first support surface;
a pair of bracing members carried by said pair of legs, respectively, each of said bracing members including an inner extremity means and an outer extremity means, said inner extremity means being rotatable about and adjustably movable along the length of the associated one of said pair of legs whereby said inner extremity means is adapted for in the direction of any one of a variety of second positioning so as to orient said outer extremity means support surfaces located at different distances and angular orientations relative to a first support surface; and
a suction cup pivotally mounted on each of said bracing members for releasably engaging the selected second support surface whereby said pair of bracing members provide constraint against lateral tipping of said pair of legs.

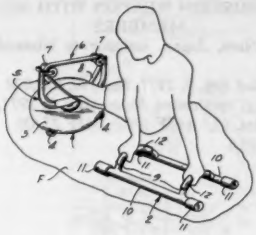
4,126,308

COMBINATION POMMEL HORSE AND ROTATABLE WHEEL MOUNTED LEG SUPPORT DEVICE

Jesse C. Crumley, 3N305 Cardinal St., Addison, Ill. 60101

Filed May 25, 1976, Ser. No. 689,855
Int. Cl.[2] A63B 5/12, 69/00
U.S. Cl. 272—64 **11 Claims**

1. An athletic training and exercising device, particularly for the pommel horse, adapted to support a user's legs while manipulating the body relative to a set of pommels, comprising a leg-supporting structrue having a generally inverted U-shaped configuration, said structure having leg-engaging means adapted to receive and support the lower leg portions of such a user for relatively free, unrestricted pivotal movement thereof, said U-shaped structure being in the form of two like inverted U-shaped members, respectively disposed in spaced parallel vertical planes, a pair of elongated base members disposed in spaced parallel relation at right angles to the planes of said U-shaped members, and each connecting the lower, free ends of corresponding legs thereof, floor-engaging means



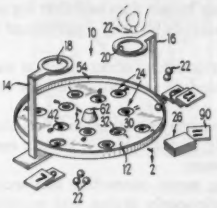
carried by said elongated base members for supporting said structure from such a floor surface for relatively free, unrestricted lateral pivotal movement with respect to the vertical, said leg-engaging means being disposed between said inverted leg portions and comprising a leg-engaging endless belt supported by a pair of laterally spaced supporting rollers, carried by said U-shaped members, which belt forms a cradle upon which such a user's legs may rest, with said belt being relatively freely movable on said spaced supporting members relative to said U-shaped members in a lateral direction transverse to such a user's body axis.

4,126,309

ROTATABLE TARGET GAME DEVICE

Alan A. Hicks, Chicago; Jeffrey D. Breslow, Highland Park, and Eugene Jaworski, Park Ridge, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 7, 1977, Ser. No. 765,979
Int. Cl.[2] A63F 9/00
U.S. Cl. 273—95 R **12 Claims**



1. An amusement apparatus, comprising:
a frame;
a playing surface mounted on said frame for movement with respect thereto;
at least one target means disposed on and carried by said movable playing surface;
at least one projectile which is released from a predetermined elevated position for movement toward said playing surface under the influence of gravity; and
aiming means to facilitate directing of said projectile along a path of travel into engagement with said target means,
said playing surface having at least one passage formed therethrough,
said target means comprising a displaceable member, means for urging said displaceable member from a first position to a second position and means located on said displaceable member for cooperating with said playing surface to

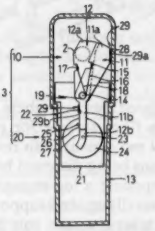
retain said displaceable member in said first position, said displaceable member moving from said first position to said second position in response to said urging means when said projectile is released and engages said target means,

said displaceable member including indicia aligned with said passage in said second position representing an engaged target means.

4,126,310
LIGHT EMISSION WEAPON WITH SHUTTER MEMBERS

Nobuo Nagai, Nara, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan

Filed Sep. 9, 1977, Ser. No. 832,028
Claims priority, application Japan, Jun. 7, 1977, 52/067619
Int. Cl.[2] A63F *9/02*; F41F *27/00*
U.S. Cl. 273—101.1 **4 Claims**



1. A shutter device in combination with a light emission weapon which emits a light beam through a muzzle from a filament electric bulb connected to a power source, said shutter device comprising:

first and second shutter members pivotably mounted in said weapon so as to selectively intercept and block said light beam, said shutter members being parallel to and independent of each other;

said first shutter member having a first leg extending therefrom;

said second shutter member having a second leg extending therefrom in the same direction as said first leg, said second leg being longer than said first leg such that said first said leg coextends for only a portion of the length of said second leg;

a rotatable drive disc adjacent said first and second legs;

means connected to said drive disc for rotating said drive disc;

first biasing means contacting said first shutter member for continuously urging said first shutter member away from said light beam;

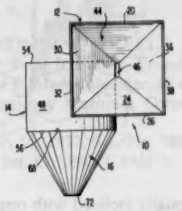
second biasing means contacting said second shutter member for continuously urging said second shutter member into said light beam; and

at least one pin member means extending from the face of said drive disc in the direction of said leg members for intermittently contacting the coextending portions of both leg members simultaneously during rotation of said disc and urging said first shutter member against said first biasing means into said light beam and urging said second shutter member against said second biasing means away from said light beam, for intermittently contacting the non-coextending portion of said second leg member alone during rotation of said disc and urging said second shutter member away from said light beam, whereby neither shutter member intercepts said light beam, and for intermittently contacting neither leg member during rotation of said disc, whereby said first shutter member is urged away from said light beam by said first biasing means and said second shutter member is urged into said light beam by said second biasing means.

4,126,311
BULLET TRAP

Lewis R. Wagoner, Box 112, Saratoga, Wyo. 82331

Filed Jan. 27, 1977, Ser. No. 763,215
Int. Cl.[2] F41J *1/12*
U.S. Cl. 273—102.4 **2 Claims**



2. A bullet trap comprising:

an entry funnel comprising a plurality of funnel walls secured to one another and having an open mouth and an opening defining a throat of gradually reduced dimension from the mouth to the opening;

a tank having a tubular main tank wall, a top wall, and an orifice formed therein adjacent the top wall;

the entry funnel being connected in substantially tangential relationship to the main tank wall with said opening aligned with said orifice; said mouth being located partially above the tank wall with the opening disposed at the upper extremity of the tank;

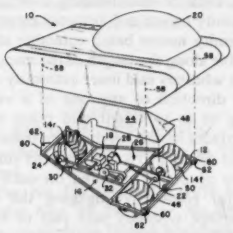
the main tank wall having a lower wall edge;

a cone having a cone wall of inverted frusto-conical form fixedly secured to the lower wall edge of the main tank wall and having a bottom exit aperture; the cone wall having an interior surface with corrugations formed therein; and the corrugations being substantially vertically orientated.

4,126,312
RADIO-CONTROLLED SURFACE TARGET HAVING A PLIABLE COVER

John A. Kreuzer, Mission Viejo, and John F. Gothard, Jr., El Toro, both of Calif., assignors to Brunswick Corporation, Skokie, Ill.

Filed Feb. 1, 1977, Ser. No. 764,704
Int. Cl.[2] F41J *9/02*
U.S. Cl. 273—105.2 **19 Claims**



1. A target simulating a moving ground vehicle comprising:

vehicle chassis means;

means affixed to said chassis means for propelling and maneuvering said chassis means;

radio signal receiving and transducing means mounted on said chassis means for controlling said propelling and maneuvering means;

armor means disposed on said chassis means for protecting said propelling and maneuvering means and said controlling means; and

a target envelope having the appearance of the upper portion of a ground vehicle, said target envelope including a

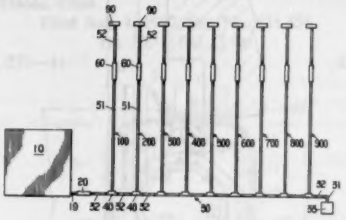
plurality of individual inflatable components and a framework of rigid support members, each of said components being separately attached to said framework.

4,126,313

MECHANISM FOR SUPPLYING GOLF BALLS TO TEES OF A GOLF COURSE

Koji Izumi, 5-1, 7-chome, Mikagehonmachi, Higashinada-ku, Kobe City, Hyogo Prefecture, Japan

Filed Jan. 3, 1977, Ser. No. 756,394
Int. Cl.² A63B 57/00
U.S. Cl. 273—201 **9 Claims**



1. A mechanism for supplying golf balls fully automatically to a plurality of tees (93) on an exercising ground, comprising: a ball reservoir (10) for containing a plurality of balls; a ball discharging device (20) connected to an outlet (19) of said reservoir, from which balls are released; inclined main ball flow-path means (30) connected to said discharging device for gravitally transferring balls released from the latter; each of said tees being provided with an inclined branch ball flow-path means connected to said main flow-path means for gravitally transferring balls released from said main flow-path means, in which balls are located, including means for preventing said branch flow-path means from becoming empty before balls are supplied from said discharging device; a ball flow changeover device (40) provided at the junction points of said main flow-path means and each said branch flow-path means to divert the flow of balls from said main flow-path means to said branch flow-path means; a ball-level inspection device (60) in said branch flow-path means, operating according to a quantity of balls in said branch flow-path means; a ball serving device (90) at the end of said branch flow-path means for supporting balls in a teed position to be hit by a player; and electric control circuits for selectively activating respective ones of said ball discharging device, said main flow-path means and branch flow-path means, said changeover device, said inspection device and said serving device, and for controlling the ball sending flow for said tee but preventing the flow of balls to any other tee until the supply of balls to said tee is completed.

4,126,314

APPARATUS FOR PLAYING A GOLF AND/OR PUTTING GAME

Robert Martin, 1 Pannells, Terrace La., Freshwater Bay, Isle of Wight, England

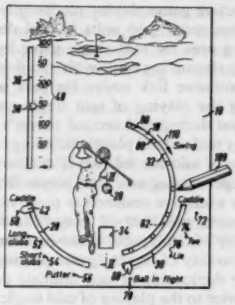
Filed Mar. 23, 1977, Ser. No. 780,355
Claims priority, application United Kingdom, Mar. 31, 1976, 13035/76
Int. Cl.² A63F 3/00
U.S. Cl. 273—245 **11 Claims**

1. Apparatus for playing a golf and/or putting game, said apparatus comprising:

(a) a panel having a window therein;

(b) a stroke result indicator member rotatably mounted to and behind said panel and having spaced around its axis of rotation a set of markings which represent different results for a stroke imparted to a golf ball by a golf club, said markings being positioned so that each is behind said window in said panel when said stroke result indicator member is at an associated angular position with respect to said panel;

(c) a masking member positioned between said panel and said stroke result indicator member and movable between a first position in which it masks said window in said panel and a second position in which it does not mask said window in said panel; and



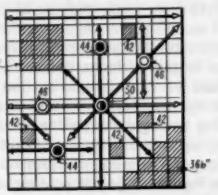
(d) stroke simulating means enabling mannual rotation of said stroke result indicating member from in front of the said panel to a stop position in which one of said markings is behind said window in said panel, said masking member being adapted to be moved to said second position as said stroke result indicating member is moved to said stop position whereby said one marking will be visible.

4,126,315

MATHEMATICAL BASED BOARD GAME APPARATUS

Chuen K. Tung, 177 White Plains Rd., Apt. 69F, Tarrytown, N.Y. 10591

Filed May 18, 1977, Ser. No. 797,934
Int. Cl.² A63F 3/02
U.S. Cl. 273—271 **11 Claims**



10. In a mathematical based board game apparatus for at least two players having a matrix grid game board containing a game playing area ultimately defined by a plurality of grid units each capable of containing a game playing piece therein for covering said grid unit in which logical deployment of a plurality of said game playing pieces by said players during alternating designated turns to completely uncover all of said grid units defining said ultimate game playing area determines the winner of the game; the improvement comprising

a plurality of blocking pieces;

a first plurality of exclusive connective game playing pieces for a first player, said first player exclusive connective game playing pieces only being deployable in the uncovered grid units in said defined ultimate game playing area for said single game by said first player during alternating turns with said second player for establishing exclusive link nodes for said first player usable during the playing of said single game for enabling the removal during said first

player's turn of a move pattern by said first player including said grid unit covered by one of said first player exclusive connective pieces while preventing said second player from using said first player exclusive connective piece covered grid unit as a link node, said first player having a predetermined quantity of deployable exclusive connective pieces;

a second plurality of exclusive connective game playing pieces for a second player, said second player exclusive connective game playing pieces only being deployable in the uncovered grid units in said defined ultimate game playing area for said single game by said second player during alternating turns with said first player for establishing exclusive link nodes for said second player usable during the playing of said single game for enabling the removal during said second player's turn of a move pattern by said second player including said grid unit covered by one of said second player exclusive connective pieces while preventing said first player from using said second player exclusive connective piece covered grid unit as a link node, said second player having a predetermined quantity of deployable exclusive connective pieces;

a first plurality of regular game playing pieces for said first player deployable in said ultimate defined game playing area prior to the playing of said single game, said deployed first player regular game playing pieces only being removable by said first player from the grid units covered thereby in said ultimate defined playing area for said single game on each of said first player's designated turns during the playing of said single game for either uncovering a single covered grid unit in said ultimate game playing area during one of said turns for removing any one of a plurality of different move patterns comprising at least an adjacent portion of said deployed first plurality of regular game playing pieces for uncovering an equal plurality of adjacent covered grid units in said ultimate game playing area during one of said turns dependent on the portion of said covered ultimate game playing area said first player intends to uncover on a given one of said first player's designated turns, at least one of said move patterns removable by said first player comprising at least one of said first player exclusive link nodes; and

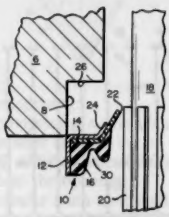
a second plurality of regular game playing pieces for said second player deployable in said ultimate defined game playing area prior to the playing of said single game, said deployed second player regular game playing pieces only being removable by said second player from the covered grid units in said ultimate defined playing area for said single game on each of said second player's designated turns during the playing of said single game for either uncovering a single covered grid unit in said ultimate game playing area during one of said turns or for removing any one of a plurality of different move patterns comprising at least an adjacent portion of said deployed second plurality of regular game playing pieces for uncovering an equal plurality of adjacent covered grid units in said ultimate game playing area during one of said turns dependent on the portion of said covered ultimate game playing area said second player intends to uncover on a given one of said second player's designated turns, at least one of said move patterns removable by said second player comprising at least one of said second player exclusive link nodes, said deployed first and second player regular game playing pieces prior to the playing of said single game completely covering said ultimate defined game playing area, whereby each player may initially deploy blocking pieces to define said ultimate game playing area as well as deploy connective pieces dependent on mathematical based strategy, thereafter deploying regular game playing pieces until said ultimate game playing area grid units are completely covered, and thereafter remove at least said regular game playing pieces and connective pieces during each of said turns during the playing of said single game until all of said grid units defining said ultimate game playing area covered by said regular and connective pieces are uncovered whereupon the winner is determined.

4,126,316

METHOD OF INSTALLING SHAFT SEAL WITH REFORMABLE SHELL

Douglas A. Cather, Jr., Gastonia, N.C., assignor to Garlock Inc., Rochester, N.Y.

Filed May 2, 1977, Ser. No. 792,818
Int. Cl.² F16J *15/56*
U.S. Cl. 277—1 **6 Claims**



1. A method of installing a shaft seal in a machine housing after passing said seal over an obstruction on a shaft comprising:

(a) providing annular seal means with a resilient reformable seal element having a sealing lip with an as formed I.D. greater than the maximum O.D. of said obstruction,

(b) passing said seal means axially over said obstruction,

(c) reforming at least a portion of said seal element by engagement with a portion of said machine housing during installation in said housing to reduce the I.D. of said sealing lip, thus

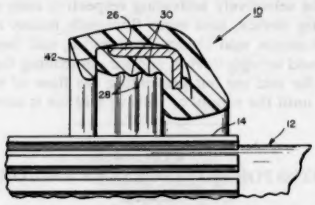
(d) causing said sealing lip to sealingly engage said shaft.

4,126,317

SEAL FOR INSTALLING SEAL OVER SPLINED SHAFT

Dean R. Bainard, Clover, S.C., assignor to Garlock Inc., Rochester, N.Y.

Filed May 24, 1976, Ser. No. 689,038
Int. Cl.² F16J *15/34*
U.S. Cl. 277—9.5 **30 Claims**



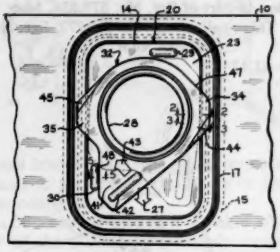
1. An annular shaft seal to be moved over a first, larger diameter portion of a shaft and to seal against a second, smaller diameter portion of said shaft, comprising a mounting portion and a sealing lip portion having a sealing lip, said sealing lip portion being movable, with respect to said mounting portion, from a sealing configuration in which said sealing lip has the smallest diameter of all portions of said seal and is adapted to be in contact with said second portion of said shaft, to a non-sealing configuration in which the diameter of said sealing lip is greater than that of at least one other portion of said seal, and in which said at least one other portion of said seal is located directly radially inwardly of said sealing lip and between the sealing lip and the shaft, such that said sealing lip cannot contact either portion of said shaft when said seal is being

installed on said shaft, whereby said sealing lip can be located out of contact with said first portion of said shaft during installation, and said sealing lip portion also being movable with respect to said mounting portion, from said non-sealing configuration back to said sealing configuration, whereby said sealing lip can be moved into sealing contact with said second portion of said shaft after said seal has been moved over and beyond said first portion of said shaft to said second portion of said shaft.

4,126,318
GASKET ASSEMBLY WITH LOCK PLATE

Jerome G. Belter, Mt. Prospect, Ill., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 4, 1977, Ser. No. 821,456
Int. Cl.[2] F16J *15/06*
U.S. Cl. 277—11 **12 Claims**

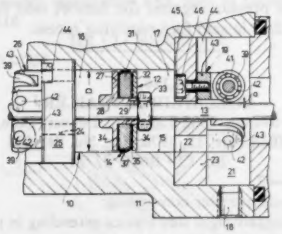


1. A gasket assembly having a gasket defining an aperture, said gasket aperture having an axis extending therethrough, and a gasket attachment comprising a base having a portion for engagement with said gasket adjacent said gasket aperture, and a lock plate having a portion movable relative to said base from a first position generally radially within said gasket aperture to a second position for engagement with another side of said first gasket adjacent said gasket aperture.

4,126,319
DOUBLE-ACTING PISTON

Gotthold Raabe, Stuttgart-Fasanenhof, Fed. Rep. of Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Fed. Rep. of Germany

Filed Mar. 18, 1977, Ser. No. 779,200
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1976, 2611999
Int. Cl.[2] F16J *15/32*
U.S. Cl. 277—152 **6 Claims**



1. In a measuring instrument: housing means within which a pressure chamber is defined; bearing means mounted to the housing means on either side of the pressure chamber; an elongated piston rod supported by the by the bearing means for reciprocal displacement along its longitudinal axis and relative to the bearing means; and a double-acting measuring piston mounted to the piston rod for reciprocal displacement within the pressure chamber,

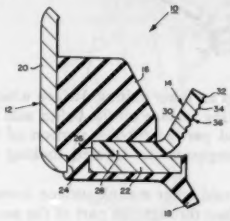
said piston dividing the pressure chamber into separate chambers each containing a pressure medium pulsating at slight pressure differences, and whose average pressure is similar,

said piston including a pair of spaced, substantially parallel disposed, annular sealing members, each having foil-like sealing lip portions at their free end that extend toward each other at an angle to the pressure chamber wall which is greater than 0° and in the longitudinal direction of the piston rod into engagement with the pressure chamber wall, said sealing lip portions having a thickness of between 0.05 and 0.2 millimeters.

4,126,320
SHAFT SEALS

Darrell D. Pendleton, Gastonia, N.C., assignor to Garlock Inc., Rochester, N.Y.

Division of Ser. No. 544,803, Jan. 27, 1975, Pat. No. 4,038,359. This application Mar. 18, 1977, Ser. No. 779,270
Int. Cl.[2] F16J *15/32*
U.S. Cl. 277—152 **5 Claims**



1. A shaft seal comprising:

(a) a single annular metal case having a radial flange and a cylindrical portion;

(b) an annular polytetrafluoroethylene sealing element including a radial portion and a sealing lip, said radial portion being in contact with an inside surface of said radial flange of said case;

(c) a molded, annular, synthetic rubber filler ring bonded to both said cylindrical portion of said metal case and the inside surface of said radial portion of said sealing element, said ring being located in the annular space between said radial portion of said sealing element and said cylindrical portion of said metal case and being a solid body substantially filling said annular space and being spaced away from and out of contact with said sealing lip; and

(d) an annular auxiliary lip molded from said synthetic rubber, bonded to said metal case and located on the opposite side of said radial flange from said sealing element.

4,126,321
PACKINGLESS BELLOWS SEAL

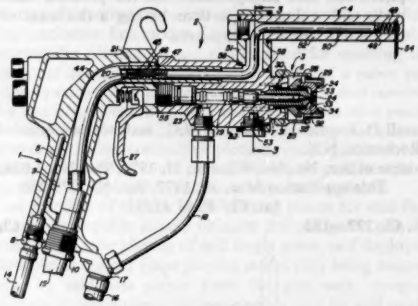
Martin J. Harjar, Vermilion, and Donald R. Hastings, Elyria, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Continuation-in-part of Ser. No. 705,338, Jul. 14, 1978, Pat. No. 4,079,894. This application Nov. 3, 1977, Ser. No. 848,178
Int. Cl.[2] B05B *7/12*; F16J *15/56*
U.S. Cl. 277—113 **14 Claims**

1. A hydraulic seal between an opening into a conduit and a rod extending into the conduit through the opening comprising:

a deformable diaphragm surrounding part of the rod, having a first end hydraulically sealed to the periphery of the opening, and having a generally tubular, expandable, but at least moderately resilient extension at a second end;

a bulge on the rod, comprising a first portion having an increasing cross-sectional dimension and a second portion having a diminishing cross-sectional dimension with the first portion being closer to the opening than the second portion, the bulge having an outside diameter at its point of maximum bulge which is larger than the inside diameter of the second end of the diaphragm, at least one portion of the bulge being a frusto-conical tapered locking surface, and the locking tapered surface of the bulge being at least partially encompassed by the tubular portion of the diaphragm;



member having an inner mating surface which mates to the tapered locking surface on the bulge, said mating surface being around part of tubular portion of the diaphragm which encompasses the tapered locking surface of the bulge;

means urging said inner mating surface toward the tapered locking surface through the part of the second end of the diaphragm which is between the tapered locking surface of the bulge and the mating surface of said member.

4,126,322

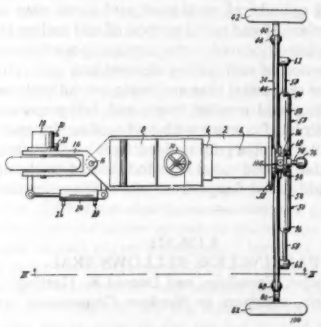
ANTI-OVERTURNING VEHICLE

Herbert L. Mika, 1601 Central Ave., Kansas City, Kans. 66102

Filed Apr. 7, 1977, Ser. No. 785,338

Int. Cl.[2] B60G *17/00*

U.S. Cl. 280—6.11 **6 Claims**



1. An anti-overturning vehicle comprising:

a. a frame,

b. a transverse axle extending transversely to said frame, pivoted at its midpoint to said frame on a horizontal, fore-and-aft axis, and extending laterally in both directions from said frame, said frame being laterally tiltable relative to said axle,

c. a ground-engaging wheel carried at each end of said axle for rotation on an axis transverse to said vehicle, and

d. power operating means operable to tilt said frame relative to said axle, whereby said frame is maintained in a horizontal, upright position, laterally centered between said wheels, when said vehicle is traversing sloping ground transversely to the inclination of said ground, said operating means comprising hydraulic rams interconnecting said frame and said axle at points thereof spaced apart from the pivotal connection of said axle to said frame, and operable by extension of retraction thereof to tilt said frame in respectively opposite directions relative to said axle, and hydraulic control means operable to deliver hydraulic fluid under pressure to said rams to selectively either extend or retract them, whereby said frame may be tilted selectively in either direction relative to said axle.

4,126,323

SKATE BOOT

Hans R. Scherz, 228 Prince Albert Ave., Montreal, Quebec, Canada (H3Z 2G6)

Continuation-in-part of Ser. No. 577,654, May 15, 1975, abandoned. This application Feb. 8, 1977, Ser. No. 766,674

Int. Cl.[2] A63C *1/26*

U.S. Cl. 280—11.12 **9 Claims**

1. A boot for a skate having a runner, the boot including a sole, an upper, and a separate heel portion, at least one of the upper and heel portions being fixed to the sole, means connecting the runner to the sole, the upper having a pair of side walls, the upper and sole portion defining a tapered foot-receiving recess having a wedge shape of a human foot, said heel portion including a vertical heel member with a pair of side walls overlapping side walls of the upper, means connecting said heel portion to said upper permitting relative limited longitudinal sliding movement and pivoting movement between said heel portion and said upper, said means including cooperating connectors in the respective side walls of the upper and heel portion, and fastening means for adjustably fastening said heel portion and said upper such that when a foot is inserted in the foot-receiving recess, said fastening means retains said heel portion under pressure against the heel of said foot thereby wedging the foot in said foot-receiving recess.

4,126,324

COLLAPSIBLE TRAILER

Willard A. Browning, 1302 Elder St., Denver, Colo. 80221

Filed Nov. 15, 1976, Ser. No. 741,788

Int. Cl.[2] B62D *21/14*

U.S. Cl. 280—42 **11 Claims**

1. A collapsible trailer comprising:

a pair of elongate rigid side frames extending in parallel fore and aft relation having elongate upstanding side boards connected thereto and extending along the major portion of the lengths of the side frames;

connector means at the forward ends of the frames for attachment to a towing device;

vertically yieldable support means connected to and extending beneath each frame;

a laterally extending stub axle connected to each support

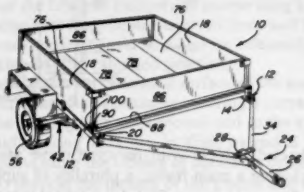
means and having an outer end carrying a road wheel and an inner end provided with a connector formation;

a cross-axle assembly having means at each end for engagement with the connector formation of one of the stub axles;

a plurality of cross braces connected at their ends to spaced points along the lengths of the side frames to complete a supporting structure;

a plurality of elongate floor boards adapted to lie on the cross braces in attitudes parallel to the longitudinal axis of the trailer;

at least one floor board being hingedly connected at spaced points along its length to each side frame to swing between a first position lying on the cross braces and a second position juxtaposed to its respective side board;



and the cross braces being readily disconnectable from the side frames to permit lateral collapse of the trailer to a narrower configuration;

the cross-axle assembly having a variable effective length laterally of the trailer to selectively maintain the side frames at a first lateral spacing corresponding to the full width configuration of the trailer and at a second lateral spacing corresponding to the narrower configuration of the trailer; in which

at least one of the floor boards hingedly connected to a side frame has a width corresponding to the lateral spacing of the side frames in the narrower configuration of the trailer and lies with its longitudinal edges on the side frame to constitute the trailer bed in such configuration.

4,126,325

INFLATABLE AIR BAG FOR MOTOR VEHICLES FOR ATTENUATING THE IMPACT EFFECT OF THE PASSENGER IN CASE OF ACCIDENT

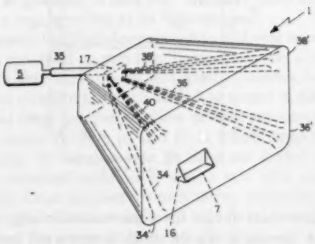
Per O. Weman, Stockholm, Sweden, assignor to Klippan GmbH Hamburg, Hamburg, Germany

Division of Ser. No. 579,518, May 21, 1975, Pat. No. 3,994,506, which is a division of Ser. No. 370,087, Jun. 14, 1973, Pat. No. 3,907,328, which is a division of Ser. No. 152,129, Jun. 11, 1971, Pat. No. 3,788,663. This application Jun. 29, 1976, Ser. No. 701,009

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1970, 2030518

Int. Cl.[2] B60R *21/08*

U.S. Cl. 280—738 **3 Claims**



1. In an inflatable air bag disposed within the passenger compartment of a motor vehicle subject to impact and adapted for inflation with fluid supplied in part from a cartridge upon impact of the vehicle, the improvement wherein said bag has (a) at least one air intake opening provided in the front wall thereof, and (b) closure means comprising a flap operably associated with said air intake opening and a nozzle in communication with said cartridge and disposed within said bag, said nozzle having a plurality of openings, at least one opening directing said fluid towards the corners of said bag so as to inflate said bag and at least one other opening directing said fluid against the back side of said flap to automatically seal said air intake opening after inflation of said bag.

4,126,326

TRAINING ROLL-ON BALL WITH BALANCING SUPPORTS

Marjorie E. Phillips, 7128 Haverford Dr., Dallas, Tex. 75214

Filed Sep. 15, 1976, Ser. No. 723,544

Int. Cl.[2] B62K *1/00, 9/00*

U.S. Cl. 280—205 **2 Claims**

1. A training, playing and exercise device for use by a rider on a surface, comprising:

a ball, and

a frame, including,

at least two upwardly extending members disposed to provide support for the rider, each one of said members flaring outward from the ball and including a handle and means for adjusting the length of said one member to the handle thereof, whereby increasing said length of said member increases the distance between the handles,

means on the frame for permitting the frame to move in any direction along the surface in a low-friction manner while maintaining said members in the upward, supporting dispositions thereof, and

means on the frame for holding the ball with an upper surface thereof exposed to be stood upon by the rider, including means for permitting the ball to rotate in a low-friction manner in any direction about the center thereof, and roll along the surface, said means for holding including a ring with a plurality of anti-friction bearings around the ring and disposed toward the interior thereof to engage the surface of the ball,

whereby the rider may stand upon the ball, gaining support from said members, and roll the ball along the surface.

4,126,327

RACK AND GOLF CART

Russell E. Taber, 46 Crystal Cir., Ormond Beach, Fla. 32074

Filed May 18, 1977, Ser. No. 798,102

Int. Cl.[2] B62B *1/14*

U.S. Cl. 280—47.26 **8 Claims**

1. A golf cart comprising:

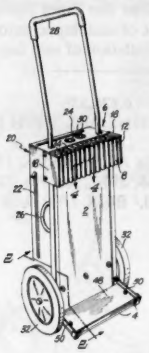
a rigid panel having upper and lower ends;

a pair of ground wheels mounted on said panel at its lower end and at the rear side thereof;

a pull handle member extending from the upper end portion of said panel;

a tray extending from the front side of said panel at the lower end thereof for receiving the heads of golf clubs;

clamping means on said front side of said panel, adjacent the upper end thereof, said clamping means comprising a strip



of flexible resilient plastic material secured to said panel at spaced points thereacross, the material of said strip between said spaced points defining forwardly extending resilient loops of a height greater than their lateral spacing, adjacent loops being sufficiently close together to conform to and frictionally receive and hold the shaft of a golf club therebetween; and

a body of resilient material in each of said loops holding said loops yieldably expanded toward adjacent loops.

4,126,328

HITCHES

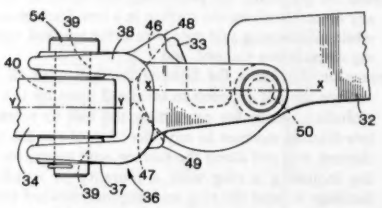
John L. Old, Kenilworth, England, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Jan. 14, 1977, Ser. No. 759,508

Claims priority, application United Kingdom, Dec. 22, 1976, 53459/76

Int. Cl.[2] B60D *1/06*

U.S. Cl. 280—415 A **8 Claims**



1. A hitch assembly for connecting together towing and towed vehicles comprising an adaptor having a clevis at one end for attachment to one vehicle having a draw tongue, an opening towards the other end, the opening being arranged to receive a hook mounted on another vehicle, and attachment means for attaching the end of the adaptor remote from the clevis releasably to the root of the hook, the opening having side walls profiled to inhibit movement of the adaptor about the attachment means and the adaptor lying in a generally horizontal plane between the draw tongue and the hook when in use.

4,126,329

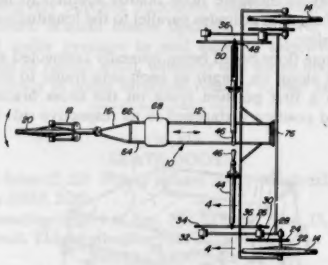
WHEELED VEHICLE WITH OAR-TYPE PROPULSION

Shimon S. Tchernyak, 9727-155 St., Edmonton, Alberta, Canada (T5P 2K8)

Filed Jun. 21, 1977, Ser. No. 808,697

Int. Cl.[2] B62M *1/14*

U.S. Cl. 280—220 **10 Claims**



1. A wheeled vehicle with oar-type drive assembly, said vehicle including a main frame, a plurality of support wheels journalled from said frame, first drive wheel means drivingly connected to one of said support wheels and journalled from said frame for rotation about a first axis, a second drive wheel means journaled from said frame for rotation about a second axis spaced from and generally paralleling said first axis, an endless drive member trained over said drive wheel means, an elongated lever, means universally anchoring one end of said lever to said drive member for orbiting therewith about said drive wheels, and means universally anchoring a mid portion of said lever relative to said frame, the other end of said lever including hand grip means.

4,126,330

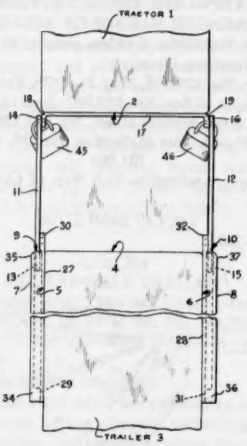
ANTI-THEFT DEVICE FOR TRACTOR-TRAILER RIG

William H. Poole, 1200 S. Willow, Chattanooga, Tenn. 37404

Filed Jul. 15, 1977, Ser. No. 815,901

Int. Cl.[2] B60D *1/00*

U.S. Cl. 280—474 **6 Claims**



1. An anti-theft device for a tractor-trailer rig, said tractor-trailer rig having a tractor with a rearward surface facing rearward and a trailer with a forward surface facing forward and spaced substantially parallel side surfaces, said anti-theft device comprising

a pair of housings, each affixed to a corresponding side surface of the trailer and terminating at an open end at the forward surface of said trailer;

a pair of rigid substantially elongated locking bars, each having spaced opposite first and second ends and each retractably slidably mounted in a corresponding one of the housings in a manner whereby in retracted position the locking bars are in the housings and extend substantially to the forward surface of the trailer at their second ends and in extended position said locking bars extend out of said housings for most of their lengths beyond the forward surface of said trailer to operative proximity with the rearward surface of said tractor in spaced substantially parallel relation;

anchoring means formed in each of the housings in the area of the open end thereof and in each of the locking bars in the area of the first end thereof and cooperating to prevent said locking bars from being removed from said housings;

locking means in each of said housings for releasably locking said locking bars in extended position;

eye means affixed to the rearward surface of the tractor; and

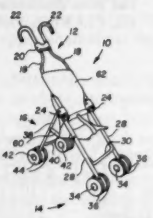
a pair of padlocks, each releasably securing a corresponding one of the locking bars at its second end to the eye means when said locking bars are in their extended positions thereby preventing the turning of the trailer relative to the tractor to prevent the turning of the tractor and trailer rig around corners and thereby discouraging theft of the rig.

4,126,331

FOLDABLE STROLLER

James L. Sloan, Avon, and Greg W. Meeker, Rochester, both of N.Y., assignors to Cross River Products, Inc., Rochester, N.Y.

Filed Jun. 8, 1977, Ser. No. 804,780
Int. Cl.² B62B *11/00*
U.S. Cl. 280—650 **11 Claims**



1. A foldable stroller for children movable between a compact folded position and an erect position for receiving and supporting a child comprising:

(a) handle means having a handle at one end of said handle means and having a handle member at its opposite end;

(b) front wheel support means for rotatably supporting front wheels at one end of said front wheel support means and having a front member at its opposite end hingeably connected to said handle member;

(c) rear wheel support means for rotatably supporting rear wheels at one end of said rear wheel support means and having a rear member at its opposite end;

(d) slide means hingeably connected to said rear member and slidably mounted on said handle member, said slide means being slidably movable on said handle member between a retracted position in which said slide means is disengaged from said front member to allow pivotal movement of said handle means relative to said front wheel support means for folding the stroller into its compact folded position, and an extended position in which said slide means engages said front member for preventing pivotal movement of said handle means relative to said front wheel support means and for supporting the stroller in its erect position for receiving and supporting a child; and

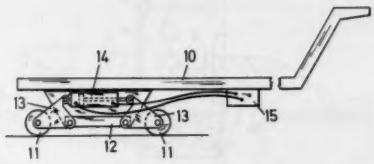
(e) means hingeably interconnecting said front wheel support means to said rear wheel support means for rigidly supporting said rear wheel support means in the erect position of the stroller.

4,126,332

TRANSPORT VEHICLE

Anders Johansson, Bohus Björko, Sweden, assignor to Salen & Wicander Terminalsystem AB, Vastra Frolunda, Sweden

Filed Feb. 9, 1977, Ser. No. 767,212
Claims priority, application Sweden, Feb. 26, 1976, 7602454
Int. Cl.² B60G *11/28*
U.S. Cl. 280—683 **4 Claims**



1. In a transport vehicle comprising a load carrying platform and wheels carrying the same, said wheels being arranged in at least one row, transversely located with respect to the platform, the improvement comprising:

(A) a plurality of double acting, hydraulic piston rams, each having a high-pressure side and a low-pressure side,

(B) means for mounting at least two wheels to each side of the longitudinal center line of the vehicle, each wheel being connected to one of said rams,

(C) means for feeding pressure fluid to said rams including two circuits, each circuit including supply and return flow conduits, normally operating independently of each other, of which circuits one is connected to rams located to one side of said longitudinal center line, and the other circuit is connected to rams located to the other side thereof,

(D) a valve means in a portion of each of said conduits being connected to the high-pressure sides of the corresponding rams in said conduits, each of said valve means including means for exerting a predetermined biasing force to maintain said valve means in its open position, and

(F) a pressure sensing conduit communicating each of said valve means with a high-pressure portion of the opposite circuit, to close either of said valve means, upon the pressure in the opposite circuit sinking below a predetermined value.

4,126,333

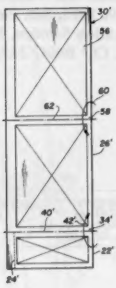
METHOD OF PREPARING A PUBLICATION WITH A SEPARABLE REDEMPTION COUPON OR THE LIKE

Robert H. Dickinson, Plandome, N.Y., assignor to Lehigh Press Inc., Pennsauken, N.J.

Filed Jun. 2, 1977, Ser. No. 802,811
Int. Cl.² B42D *1/00*
U.S. Cl. 281—3 R **10 Claims**

1. A method in the preparation of a publication of binding a unitary printed redemption coupon and a pair of associated advertising pages in said publication preparatory to the subsequent removal of said coupon separate and apart from said advertising pages, said method comprising the steps of arranging on the same paper substrate a first advertising page, said redemption coupon adjacent one end thereof with a first separation strip delineating the coupon from said first advertising page, and the second advertising page adjacent the opposite end thereof with a second separation strip, parallel to the first separation strip, delineating the second advertising page from the first advertising page, positioning said redemption coupon bodily upon said first advertising page by folding the same along a fold line located in said first separation strip, positioning said second advertising page bodily upon said first advertis-

ing page by folding the same along a fold line located in said second separation strip, inserting said coupon and said advertising pages in said folded condition with said fold lines thereof in a horizontal orientation in binding relation with other pages of said publication, binding the aforesaid insert and pages together into a unitary publication, and trimming inwardly of



the unbound three edges of said publication to contribute to a neat appearance therein, whereby the trimming of two of said publication edges is inwardly of said fold lines of said separtion strips to thereby separate said redemption coupon from said advertising pages so as to contribute to facilitated separate removal thereof.

4,126,334

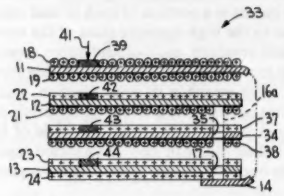
STUBLESS MULTI-PLY ASSEMBLY

Edmund G. Van Malderghem, Lewiston, N.Y., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Jul. 25, 1977, Ser. No. 818,759

Int. Cl.[2] B41L *1/24*

U.S. Cl. 282—22 R **4 Claims**



1. A unit set of multiple plies, comprising at least superimposed first, second and third plies, said first ply having a folded flap removably connected along one edge thereof by a line of weakening extending along the fold between said first ply and said flap, said third ply having at least one hole lying adjacent one edge thereof, said flap underlying said third ply and having a quantity of detachable adhesive thereon securing said first ply to said third ply, a portion of said quantity of adhesive extending through said hole and securing said second and third plies together along one edge of said second ply, said edges of said plies lying at a common end of said unit set, and said plies each being devoid of any tear lines which may form a stub, each of said plies having on each of its surfaces a coating comprising an initially colorless color-forming reactive component, a reactive component of each of the coatings of said first ply being capable of reacting to produce a colored mark with a reactive component of each of the coatings of said third ply upon coming into reactive contact therewith, a reactive component of one and another of the coatings of said second ply being capable of respectively reacting to produce a colored mark with a reactive component of said coatings of said first ply and with a reactive component of said coatings of said third ply upon coming into reactive contact therewith, said plies being in overlying relationship to one another such that one of said coatings of said first ply is disposed against said one coating of said second ply and said another coating of said second ply is disposed against one of said coatings of said third ply, whereby upon application of pressure to said unit set, said one coating of said first ply is forced into said reactive contact with said one coating of said second ply and said another coating of said second ply is forced into said reactive contact with said one coating of said third ply to thereby produce colored marks on said second and third plies, said plies being capable of rearrangement such that, upon removal of said second ply, said first ply is made to overlie said third ply with its other coating disposed against the other coating of said third ply as said first and third plies are folded about said line of weakening, whereby upon application of pressure to the rearranged unit set said other coating of said first ply is forced into said reactive contact with said other coating of said third ply to thereby produce another colored mark on said third ply.

4,126,335

HOSE AND PIPE COUPLING

Hans-Hermann Voss, Wipperfürth, Fed. Rep. of Germany, assignor to Armaturenfabrik Hermann Voss, Wipperfurth, Fed. Rep. of Germany

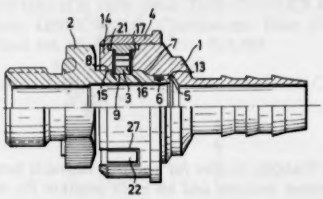
Filed Oct. 19, 1976, Ser. No. 733,747

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1975, 2547411

The portion of the term of this patent subsequent to Apr. 6, 1993, has been disclaimed.

Int. Cl.[2] F16L *37/00*

U.S. Cl. 285—39 **4 Claims**

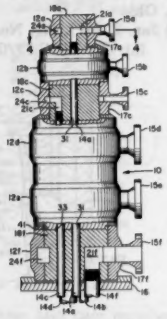


1. In a hose and pipe coupling having a coupling head and a nozzle, which is insertable therein, and which is lockable therewith by a locking element inserted in the coupling head, wherein the locking element consists of a spring-elastic ring having a slit and onto which are formed two oppositely directed arcuate spring arms embracing the coupling head and starting from the slit, and the coupling head has a slit-shaped circumferential opening for receiving a plug as well as an internal annular groove for the partial reception of the spring-elastic ring, the nozzle at the coupling side being provided with an annular groove for at least partially receiving the spring-elastic ring in the connected condition of the nozzle, the improvement comprising a protective cap displaceably arranged on the coupling head so that after the nozzle and coupling head are connected together, said cap is slid over the elastic ring, wherein the elastic ring includes gripping knobs formed on the outer ends of its spring arms, said protective cap having radial slits which are open at the rim, and gripping knobs engaging said radial slits wherein said protective cap at its end face facing the nozzle includes an inwardly drawn collar engaging behind the coupling head.

4,126,336
MULTILINE SWIVEL

John E. Ortloff; Anthony J. Masciopinto, and Kerry G. Kirkland, all of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Dec. 20, 1976, Ser. No. 752,754
Int. Cl.[2] F16L 39/00
U.S. Cl. 285—136 4 Claims



1. A multiple line fluid swivel for conducting fluids to or from multiple flow lines which comprises:

(a) upper and lower substantially identical stationary solid shafts, each shaft having a conduit formed therein extending from a bottom port in the base thereof and communicating with a side port thereof, and a passageway extending axially therethrough, said upper and lower shafts being fixedly secured together in abutting end-to-end relationship wherein the conduit of the upper shaft is aligned with the passageway of the lower shaft and the passageway of the upper shaft abuts the top surface of the lower shaft;

(b) upper and lower substantially identical housings circumferentially mounted in close conformity, respectively, on said upper and lower shafts, each housing having a side port extending therethrough and an internal surface which in combination with the exterior of its companion shaft defines an annular flow chamber in fluid communication with the side port of the conduit of said shaft and the side port of said housing;

(c) bearing means mounted above and below each annular flow chamber between each housing and its companion shaft whereby each housing is capable of rotating about its companion shaft;

(d) seal means mounted above and below each annular flow chamber between each housing and its companion shaft; and

(e) means for sealingly connecting a flowline to the bottom port of each shaft.

4,126,337
SEPARATION-PREVENTIVE TYPE PIPE JOINT

Shozo Nagao; Yoshinobu O'Hashi, and Yuichi Watanabe, all of Amagasaki, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Aug. 4, 1977, Ser. No. 821,799
Int. Cl.[2] F16L 21/08
U.S. Cl. 285—231 10 Claims

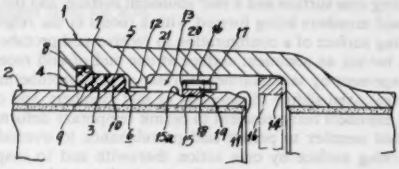
1. In a pipe joint comprising a spigot; a socket having a projection formed on the inner periphery of the open end thereof and adapted to be loosely fitted on the outer periphery of said spigot, an engagement groove disposed adjacent the inner side of said projection, and a packing seat formed adjacent the inner side of said engagement groove; and a packing having a back-up portion having a fitting portion adapted to be fitted in said engagement groove, and a seal portion adapted to be interposed in squeezed condition between said packing seat and the outer peripheral surface of the spigot, the improvement comprising:

a second projection formed adjacent the inner side of said packing seat;

a second annular recess formed on the socket and extending axially inwardly from said second projection;

an annular groove formed in the outer periphery of the front end of said spigot and located axially inwardly of the second projection in the condition of connection of the socket and spigot;

a split lock ring placeable in the innermost part of said second annular recess prior to the insertion of the spigot in



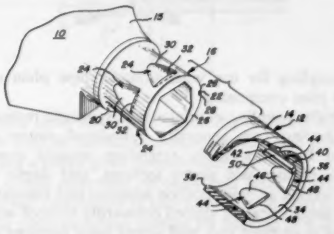
the socket, said split lock ring being movable, in said condition of connection of the socket and spigot, through the annular space between the inner peripheral surface of said second annular recess and the outer peripheral surface of the spigot into fitted relation with said annular groove, said split lock ring being engageable with said second projection axially of the pipe; and,

a coupling piece for joining the opposed free ends of said split lock ring so as to prevent said split lock ring from radially expanding from its condition of being fitted in said annular groove, said coupling piece being engageable with said opposed free ends from within the socket and through said annular space.

4,126,338
THREADED COUPLING

Joseph B. Coel, Menomonee Falls; Donald D. Jablonski, Germantown, and Edward A. Seruga, Milwaukee, all of Wis., assignors to Badger Meter, Inc., Milwaukee, Wis.

Continuation of Ser. No. 463,544, Apr. 24, 1974. This application Sep. 10, 1975, Ser. No. 611,980
Int. Cl.[2] F16L 25/00
U.S. Cl. 285—330 16 Claims



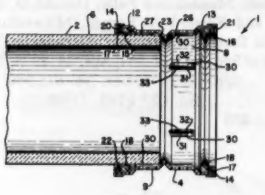
1. A connector assembly having replaceable prefabricated threads comprising a first prefabricated member including an end section having a peripheral surface extending inward from the distal end thereof parallel to a longitudinal axis of said end section, and a replaceable prefabricated interlocking second member having exposed threads extending inwardly thereof from its outward end for threaded engagement of a mating element with said assembly, said second prefabricated member having inner and outer surfaces, one of said surfaces of said second member being threaded to provide said exposed threads, the other of said surfaces of said second member being of a size and configuration designed for axial sliding mating engagement with said peripheral surface of said first member

inward from said distal end, and each of said members including preformed locking portions extending from the respective engagement surface, said preformed locking portions of said members being of complementary configurations to mechanically interengage with one another upon such axial sliding mating engagement of said second member with said peripheral surface of said first member, said preformed portions including portions of said members which interfere with one another circumferentially of said members for preventing rotary movement of said second member relative to said first member after such mating engagement therebetween, and said preformed portions including a protuberance on a mating surface of one of said members, said protuberance having a leading cam surface and a rear abutment surface, and the other of said members being formed with a recess in the respective mating surface of a configuration to receive said protuberance and having an abutment surface at one end of said recess for engagement by said abutment surface of said protuberance to prevent axial sliding disassembly of said members, and one of said members being resilient to permit temporary deformation of said member to permit said protuberance to override the opposing surface by cam action therewith and to snap into such recess during assembly for preventing axial removal of said threaded member outward of said distal end after such mating engagement therebetween, whereby said threaded surface is exposed for rotary threading engagement of a mating element with said second member inward from said outward end and said second member is secured on said end section by said interengaging portions for such rotary engagement and for transferring axial stress from said second member to said first member.

4,126,339
PLAIN END PIPE FITTING

Ernest R. Thompson, Pittsburg, Kans., assignor to W. S. Dickey Clay Mfg. Co., Pittsburg, Kans.

Filed Nov. 21, 1977, Ser. No. 853,118
Int. Cl.[2] F16L *21/02*
U.S. Cl. 285—369 **6 Claims**



1. A coupling for use with adjacent pipe plain ends for forming a joint comprising:

(a) a tubular coupling of semi-elastic synthetic resin material and having two generally cylindrical sleeve sections joined by an inwardly extending integral annular rib which divides said sleeve sections, said sleeve sections each having an inner portion adjacent said annular rib and an enlarged portion spaced outwardly thereof and terminating in an open end, said sleeve inner portions adjacent the annular rib having an inner surface of a size to receive a pipe end portion therein;

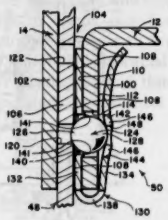
(b) each of said sleeve section inner portions having a plurality of circumferentially spaced inwardly extending integral ribs formed therein and extending longitudinally and having inner edges defining a diametrical spacing less than outside diameters of pipe ends received in said sleeve inner portions to grip said pipe end portions and support same, said sleeve inner portions being formable to accommodate outward forces applied to said circumferentially spaced ribs as pipe end portions are received therein; and

(c) annular resilient gasket members in said enlarged sleeve portions and each forming a radially inner bead for interferably engaging a pipe end portion with a compressive force and forming a liquid seal between the pipe end portion and coupling.

4,126,340
DETENT SYSTEM FOR RELEASABLY RETAINING RELATIVELY MOVABLE MEMBERS IN PREDETERMINED POSITIONS

Albert L. Pelcin, Aurora, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Filed Jun. 2, 1977, Ser. No. 802,884
Int. Cl.[2] E05C *13/02*
U.S. Cl. 292—1 **27 Claims**



1. A detent system for releasably retaining relatively movable members in a predetermined position, comprising:

(a) a pair of members which are relatively movable to successively present a series of contiguous surface portions on one of the members in spaced, side-by-side relationship with a selected part of the other of the members;

(b) the part having one side which faces toward the contiguous surface portions and having an opposite side;

(c) a hole formed through the part and having one and opposite ends which open respectively through the one and opposite sides;

(d) a detent element movably carried in the hole and having a tip projecting from the one hole end for engaging the contiguous surface portions as the members have relative to each other;

(e) a detent receiving formation provided at a location along the contiguous surface portions and being adapted to receive the projecting tip of the detent element when the members are in a predetermined relative position; and,

(f) spring clip means carried on the part and having one and opposite legs extending respectively along the one and opposite sides, with the one leg engaging the one side and with the opposite leg overlying the hole and biasingly engaging the detent element:

(i) for biasing the detent element toward the one member to hold the projecting tip in engagement with the contiguous surface portions as the members move relative to each other; and,

(ii) for biasing the projecting tip into receiving engagement with the detent receiving formation when the members are in the predetermined relative position to releasably retain the members in the predetermined relative position.

4,126,341
MOTOR DRIVEN LOCK ACTUATOR

Richard L. Bradstock, Burbank, Calif., assignor to Adams Rite Manufacturing Co., Glendale, Calif.

Filed Aug. 12, 1977, Ser. No. 823,988
Int. Cl.[2] E05C *3/16*
U.S. Cl. 292—201 **15 Claims**

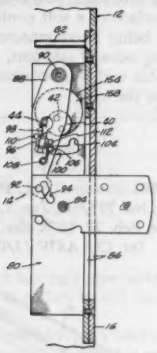
1. An electric power driven actuator unit for mounting on a hinged door frame in operative association with a lock mechanism having a bolt actuator supported for movements between bolt locking and bolt non-locking positions, comprising:

(a) a housing adapted to be affixed to an exposed surface of the door frame;

(b) adapter plug means carried by said housing, including a

cam member adapted in the affixed position of said housing for operative association with the bolt actuator of said lock mechanism;

(c) power actuating means in said housing having a driving connection with said cam member, and being selectively



energizable to rotate said cam member in directions to move the bolt actuator to locking and non-locking positions; and

(d) manual actuating means having an overriding connection for moving said cam in said directions independently of said power actuating means.

4,126,342

SECURITY DEVICE FOR LIMITING THE OPENING MOVEMENT OF A DOOR

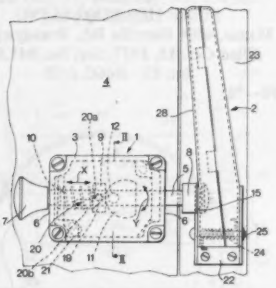
Andrew W. Harley, 4A Copthall House, Station Sq., Coventry, Warwickshire, England

Filed Jun. 16, 1976, Ser. No. 696,695

Claims priority, application United Kingdom, Jun. 17, 1975, 25701/75

Int. Cl.² E05C *17/16*

U.S. Cl. 292—269 **7 Claims**



1. A security device for permitting an inwardly-openable hinged door to be opened through a limited angle and to be held in a partly-opened position by the security device, when operative, from further opening movement, the security device comprising a latch to be mounted on the inside of the door, a retractable bolt included in said latch, and an arm to be mounted on a fixed support adjacent the latch for pivoting about an axis normal to the axis of pivoting of the door, the arm being of hollow box-like construction and having a front wall which, when the door is closed, will be substantially parallel to and adjacent the edge of the door from which the bolt of the latch extends, the front wall having a slot therein in which the bolt is received and defined by an edge in said front wall, said bolt having a transverse groove therein of crescent-shape and merging at its ends with the peripheral surface of the bolt, the width of the groove being sufficiently great that said edge is received in the groove and the groove is slidable along said edge and is engaged thereby to prevent withdrawal of the bolt from said slot as the door is opened to said partly-opened position and the arm is correspondingly pivoted until an end of said slot has been reached by said bolt and said bolt has been stopped from further movement along said arm, said edge having at least one end portion from which the groove in the bolt is disengaged when further opening of the door is to be permitted, means being provided to turn the bolt about is longitudinal axis to effect rolling of the groove from the edge of the slot at the end portion thereof when the bolt is to be disengaged from the arm.

4,126,343

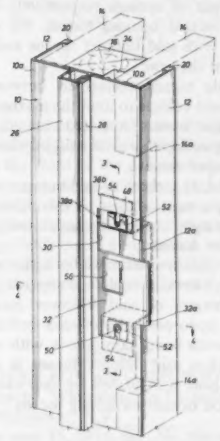
DOOR JAMB STRIKE PLATE MOUNTING ASSEMBLY

Douglas Ragland, Box 852, Houston, Tex. 77001

Filed Nov. 28, 1975, Ser. No. 635,888

Int. Cl.² E05C *13/00*

U.S. Cl. 292—341 **22 Claims**



1. A door jamb strike plate mounting assembly comprising:

a jamb member including a front section, said front section having a strike plate opening therein;

insert means insertable through said strike plate opening, disposed rearwardly of said front section, and providing a strike plate mounting surface for backing of a strike plate, said mounting surface being disposed directly rearwardly of said strike plate opening, said insert means further including a portion rearwardly underlying said front section of said jamb member;

a strike plate disposed in said strike plate opening and backed by said mounting surface;

attachment means rigidly attaching said strike plate to said insert means;

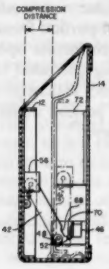
a support means located rearwardly of and fixed independently of said strike plate with respect to said front section adjacent said strike plate opening and including means operative to limit rearward movement of said insert means.

4,126,344

COMPRESSIVE BUMPER ASSEMBLY

Ronald E. Vaill, Irwin, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 2, 1976, Ser. No. 672,896
Int. Cl.[2] B60R *19/06*
U.S. Cl. 293—4 **2 Claims**



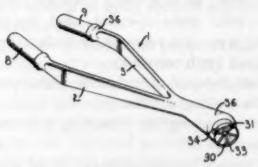
1. A compressive bumper assembly for an electrically powered vehicle comprising:
(a) bumper means for said vehicle;
(b) tensile force means comprising four cantilever springs, one pair of said springs being rigidly secured at the ends between said bumper means and said vehicle, respectively, the other pair of springs respectively having one end connected to said bumper means, the other end being contiguous with said bumper means and free for sliding displacement thereon;
(c) inextensible means connected between said bumper means and said vehicle to limit the maximum displacement of said bumper means from said vehicle, said inextensible means being collapsible under slightly compressive forces on said bumper means;
(d) lever means, connected to said bumper means at one end, and having a cam surface at the other end, said lever means yieldingly collapsing under compressive substantially vertical forces;
(e) switching means connected in series with the electric power source for said vehicle, comprising follower means, the displacement of said follower means defining the closed and open positions of said switching means, said follower means being contiguous with said cam surface, whereby when said bumper means is compressed, said follower means is displaced by said cam surface to said open position of said switching means.

4,126,345

HANDLING DEVICE FOR SOFT CONTACT LENSES

Frederick B. List, 1312 Main St., Lubbock, Tex. 79400

Filed Dec. 27, 1977, Ser. No. 864,918
Int. Cl.[2] A61F *9/00*
U.S. Cl. 294—1 CA **13 Claims**



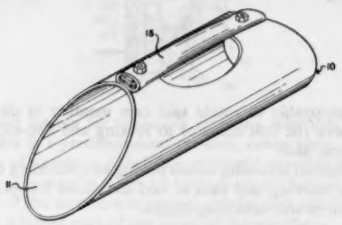
1. A device for handling soft contact lenses comprising:
(a) first and second arms each having first and second ends; the first ends of said arms being spaced apart and free, and the second ends of said arms being interconnected for relative translation of the first ends of said arms; and
(b) first and second soft tips connected with the first end of said first and second arm respectively and extending outwardly therefrom; said tips each being resilient and flexible, and having a terminal surface for frictionally engaging an outer surface of a soft contact lens inserted in an eye; said arms being interconnected for positioning said tips on opposing sides of said lens, whereby convergence of said arms folds said lens between said tips for removal of the lens from the eye.

4,126,346

SCOOP

Johnson R. Burns, 502 Roosevelt Rd., Pittsburgh, Pa. 15237

Continuation of Ser. No. 757,606, Jan. 7, 1977, abandoned. This application Feb. 27, 1978, Ser. No. 881,904
Int. Cl.[2] A47F *13/08*
U.S. Cl. 294—55 **5 Claims**



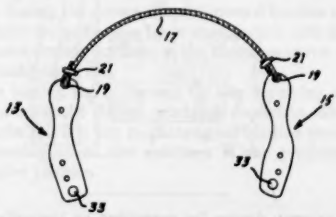
1. A scoop for sand, grain and the like comprising a tubular member having elliptical end surfaces which are slanted oppositely with respect to the longitudinal axis of the tubular member, the wall of said tubular member between the end surfaces having a circular opening therein, and a handle member attached to the wall of said tubular member at diametrically opposite sides of said opening and extending longitudinally in straddling relation across said opening and in close parallel relation to the wall of the tubular member.

4,126,347

PUMP HOUSING SLING

Donald E. Hogue, 4504 Danville Rd., Brandywine, Md. 20613

Filed Oct. 13, 1977, Ser. No. 841,868
Int. Cl.[2] B66C *1/20*
U.S. Cl. 294—74 **2 Claims**



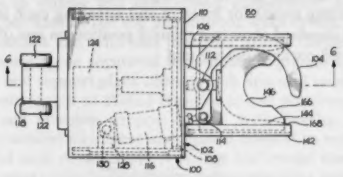
1. A sling for removing and installing a propeller pump housing on an aircraft, said sling comprising a left template adapter having a series of holes therein in alignment with the holes in the left side of the afterbody mounting bracket of the propeller pump and bolted thereto, a right template adapter having a series of holes therein in alignment with the holes in the right side of the afterbody mounting bracket of the propeller pump and bolted thereto and a cable fixedly attached between the upper ends of said left and right template adapters for engaging a hoist means, thereby allowing the pump housing to be lifted so that the unit can be safely handled during removal and installation.

4,126,348

UNIVERSAL HANDLING HEAD FOR A PIPE RACKER

Melvin J. Palmer, South Gate, Calif., assignor to BJ-Hughes, Inc., Long Beach, Calif.

Filed May 5, 1977, Ser. No. 794,003
Int. Cl.[2] E21B 19/14
U.S. Cl. 294—88 13 Claims



5. In a drilling derrick having a pipe racker, handling head to place drill pipe and drill collars in said rack comprising:

a housing member;

a rotatable latch assembly having a latching finger, said latch assembly being rotatably disposed in said housing member to permit said latching finger to be rotated at least 180 degrees between a left and right hand configuration said latching finger retaining said drill pipe and drill collar in substantially the same position whether said latching finger is in said left or right hand configuration;

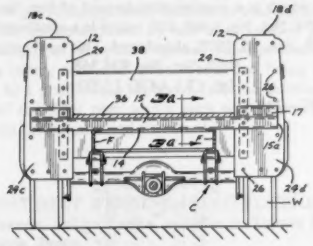
a first cylinder being disposed in said latch assembly and being coupled to said latching finger to selectively open and close said latching finger; and a rotary actuator being fixed with respect to said housing member and being coupled to said latch assembly to selectively rotate said latch assembly substantially at least 180° with respect to said housing member.

4,126,349

TRUCK BODY WITH MODULAR CONSTRUCTION

Eldrid W. Nelson, Minneapolis, and Thomas L. Auth, Shoreview, both of Minn., assignors to Chas. Olson & Sons and Wheel Service Co., Inc., both of St. Paul, Minn.

Filed Dec. 27, 1976, Ser. No. 754,511
Int. Cl.[2] B62D 33/04
U.S. Cl. 296—24 R 10 Claims



1. A truck body for mounting behind the cab, comprising:

a transverse frame structure to extend crosswise of the longitudinal frame channels of the truck chassis and to extend outwardly to both sides of the truck, and

a pair of upright body side walls in spaced and back to back relation to each other and affixed to said frame structure to be disposed at opposite sides of the truck, each side wall including

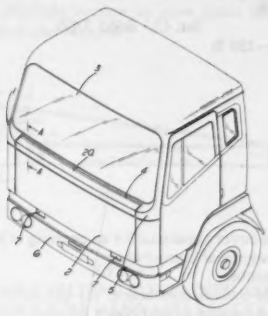
a pair of individually demountable substantially rigid plastic cabinets each carried on said frame sructure and each being integrally molded in one piece of plastic material and having fore and aft upright end walls at least one of which is in confronting and engaged relation to the end wall of another molded cabinet, said cabinets having a tandem fore and aft arrangement and having means providing access into the storage compartments thereof, and means securing the end walls of adjacent cabinets together.

4,126,350

MOTOR VEHICLES

Peter A. Briers, Preston, and William T. Lowe, Chorley, both of England, assignors to British Leyland UK Limited, London, England

Filed Mar. 7, 1977, Ser. No. 775,057
Claims priority, application United Kingdom, Mar. 6, 1976, 9086/76
Int. Cl.[2] B60J 1/02
U.S. Cl. 296—28 C 7 Claims



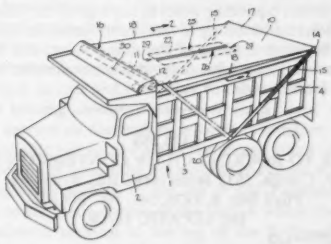
1. A truck cab comprising, a main body, a windscreen mounted in the main body, a body panel having an upper edge extending across the front of the cab immediately below said windscreen, means mounting said body panel on and in spaced relation to the main body of the cab to present a gap between the upper edge of said body panel and said main body, said upper edge of said body panel cooperating with said gap and being shaped to comprise means for providing a grab rail or handle by which a person can pull himself up toward said windscreen.

4,126,351

COVER FOR AN OPEN BODY

Raymond H. Peteretti, Whitestone, N.Y., assignor to Toneray Covers, Inc., Whitestone, N.Y.

Filed Jun. 15, 1976, Ser. No. 696,423
Int. Cl.[2] B60P 7/02
U.S. Cl. 296—100 2 Claims



1. A cover for an open body of a vehicle for covering a load in said open body comprising a flexible elongated sheet having end edges and side edges, an expandable pleat on said sheet adapted to permit the cover to expand, said pleat comprising a

longitudinal slit and underlying material underlying said slit, said underlying material mounted on the sheet adjacent each side edge of the slit and adjacent the end edges of the slit, said underlying material and said sheet being integral with each other, said slit being located substantially centrally between the side edges of the sheet and being substantially parallel thereto and being substantially centrally located between the end edges of the sheet, the side edges of the slit being in adjacency to each other when the pleat is inactive and being bowed apart from each other when the pleat is active.

4,126,352

SUNROOF

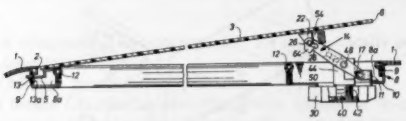
Wolfgang Vogel, Stockdorf, Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Germany

Filed Apr. 1, 1977, Ser. No. 783,553

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1976, 2615276

Int. Cl.[2] B60J *7/08*

U.S. Cl. 296—137 B **13 Claims**



1. Movable cover apparatus for an opening in a vehicle panel member arrangement comprising:

a cover member,

a releasable swivel connection for pivotally connecting a first edge portion of said cover member to adjacent vehicle frame structure,

and a tilting device for tiltingly moving said cover member with respect to adjacent vehicle panel member structure,

said tilting device including:

a tilting lever,

first connecting means for pivotally connecting said tilting lever to said cover member,

second connecting means for pivotally connecting said tilting lever to adjacent vehicle frame structure,

and tilting means engageable with said tilting lever for applying tilting forces thereto,

at least one of said first and second connecting means including a pin and elongated slot connection,

said first connecting means including means for releasably connecting said tilting lever and said cover member to one another, wherein the tilting lever is forked at its end facing the cover member, wherein said cover member includes a bracket mounted thereon which is movable in the space between fork legs formed by said tilting lever, said bracket being provided with locking pins displaceable against spring force, said locking pins forming the axis of rotation of the tilting lever on the cover member and fitting releasably in corresponding holes in the legs of the tilting lever, and wherein actuating levers are mounted on the locking pins between the legs of the tilting lever, said actuating levers being accessible only with cover member tilted and only from outside the vehicle.

4,126,353

CHAIR TO ROCKING CHAIR CONVERSION UNIT

Herbert P. Clough, 5632 Johnnycake Rd., Baltimore, Md.

Filed Dec. 6, 1976, Ser. No. 747,606

Int. Cl.[2] A47C *13/00*

U.S. Cl. 297—133 **5 Claims**

1. A structure for converting any standard chair into a rocking chair, the structure comprising:

a pair of spaced arcuate rocking means, each said spaced arcuate rocking means being hollow rectangular tubes of arcuate configuration;

smooth surface plug means inserted in the open ends of said rectangular tubes to obliterate dangerous sharp ends of said spaced rocking means, with the rearward positioned plug means having downwardly positioned protrusions to prevent backward tipping of said standard chair connected to said rocking chair when in motion of backward movement;

at least one adjustable brace rigidly connecting and intermediate the said spaced rocking means;

connecting means for leveling and attaching each leg of the said standard chair to a relative position on one of the said spaced rocking means; and

means for enclosing each said connecting means, each connecting means consisting of

a leveling member to connect the arcuate top surface of said spaced rocking means to an essentially horizontal plane of the bottom of the legs of said standard chair;

means for attaching the said leveling member to the said arcuate top surface of said spaced rocking means at a plurality of positions;

means for attaching the said variable position attachment member to the said leveling member; and

means for attaching the said legs of the said standard chair to the said variable position attachment member.

4,126,354

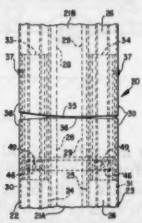
BENCH SEATS WITH END ALIGNING AND REINFORCING INSERTS

David C. DeLong, Grinnell, and William O. Shell, Urbandale, both of Iowa, assignors to Stadiums Unlimited, Inc., Grinnell, Iowa

Continuation-in-part of Ser. No. 664,668, Mar. 8, 1976, Pat. No. 4,054,316, which is a continuation-in-part of Ser. No. 519,601, Oct. 31, 1974, Pat. No. 3,960,405, which is a continuation of Ser. No. 326,600, Jan. 26, 1973, abandoned. This application Sep. 26, 1977, Ser. No. 836,368

Int. Cl.[2] A47C *11/00*

U.S. Cl. 297—248 **24 Claims**



1. Mass seating equipment comprising end-to-end positioned, multi-channeled, elongate support planks with a support surface; a front channel and a rear channel in each of said elongate support planks; inserts sized to be snug sliding fits in the respective front and rear channels; anchor means for each of said inserts in an insert-receiving channel of one of each end-to-end pair of said support planks; said front and rear

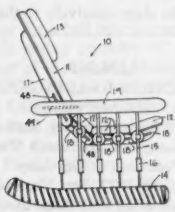
channels being spaced apart with a further channel means included in said elongate support planks between the front and rear channels, said further channel means being partially open to the bottom; said front and rear channels of said elongate support planks being partially open to the bottom between web lips extended from channel side walls; said inserts being I-beam shaped having a central web extending between end flanges, with said end flanges being formed with inwardly-turned end extremes in sliding and conforming engagement with side extreme portions of the top and bottom walls of said support plank channels and with said inwardly turned flange end extremes being space separated by a distance greater than that between said support plank channel web lips; said inserts being of adequate length to extend into end-to-end positioned channels of said elongate support planks, with overlap in each giving structural alignment and mutual support to end-to-end positioned ones of said support planks; and mount means, said mount means comprising fastener means engaging only one of said I-beam insert and channel web lips to the exclusion of the other to permit sliding adjustment between said inserts and said support plank channels; with said end-to-end positioned support planks mounted both as seat benches and as footboards; and with said end-to-end positioned planks positioned with an expansion gap between plank ends.

4,126,355

CHAIR WITH MULTI-POSITIONABLE SUPPORTING ELEMENTS

Thierry Rosenheck, 1868 Columbia Rd., N.W., Washington, D.C. 20009

Filed Nov. 28, 1977, Ser. No. 855,441
Int. Cl.[2] A47C *3/029, 3/28*
U.S. Cl. 297—258 **6 Claims**



1. A chair comprising two floor pods, two armrests, two sets of adjustable positioning tubes, each floor pod adjustably connected to one of the armrests by one of the sets of positioning tubes, a plurality of seat pads disposed between the two sets of positioning tubes, each end of each seat pad being adjustably connected to a positioning tube at a location intermediate the armrest and the floor pod, and a back pad disposed between each armrest and connected thereto.

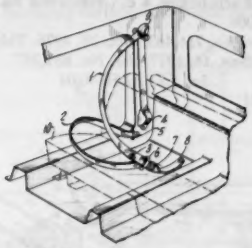
4,126,356

SEAT BELT WEBBING CONSTRUCTION

Juichiro Takada, Tokyo, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 709,369, Jul. 28, 1976, abandoned. This application Dec. 27, 1977, Ser. No. 865,048
Claims priority, application Japan, Jul. 29, 1975, 50-091606
Int. Cl.[2] A62B *35/00*
U.S. Cl. 297—386 **4 Claims**

1. A combined vehicle safety belt shoulder and waist section structure in which said shoulder and waist sections are woven of warps and wefts and possess different strength and elongation properties characterized in that said shoulder and waist sections possess a plurality of common continuous warps with some of said warps in said waist section being discontinued in said shoulder section and said waist section possessing a greater number of warps than said shoulder section and at least some of said common continuous warps possessing high non-recoverable high energy absorbing properties and at least some of said high non-recoverable high energy absorbing warps in said waist section interwoven with wefts therein extending



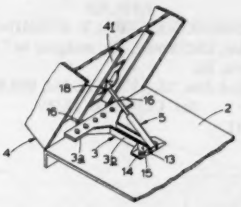
through said shoulder section as core yarns unwoven with wefts in said shoulder section.

4,126,357

DEMOUNTABLE TILTING CONTAINER ASSEMBLIES FOR LIGHT VANS AND TRUCKS

Edward J. Day, Ilford, England, assignor to Gowing Engineering Limited, London, England

Filed Dec. 5, 1977, Ser. No. 857,443
Claims priority, application United Kingdom, Dec. 16, 1976, 52583/76
Int. Cl.[2] B60P *1/16*
U.S. Cl. 298—1 A **3 Claims**



1. A unitary tilting container assembly of the portable type adapted to be mounted and demounted on a truck, which includes, in combination, a T-shaped bracing structure adapted to be bolted to the truck, there being hinged, at a first pivot axis, to the bar of the T a box-like load bearing tilting container, and there being a hydraulic ram pivotally connected on the one hand, at a second pivot axis, to the end of the leg of the T-shaped bracing structure and, at a third pivot axis, to a trunnion carried on the underside of the container, said ram being extensible and pivotal about the second pivot axis from a closed position in which the floor of the container is alongside and substantially parallel to the leg of the T-shaped bracing structure to an open position of the ram in which the floor of the container is inclined to the leg of the T-shaped bracing structure by an angle of at least 25°, all said first, second and third pivot axes being substantially parallel to one another, and wherein, in the closed position of said ram, the angle between, on the one hand, a line drawn between said first and second pivot axes and, on the other hand, a line drawn between said second and third pivot axes, is more than 5° and less than 15°.

4,126,358

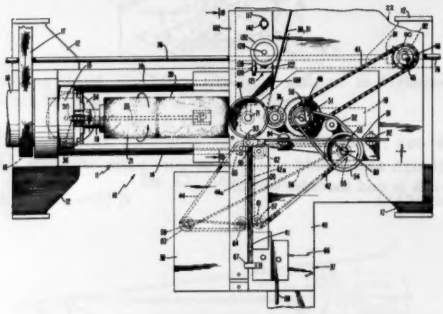
METHOD AND APPARATUS FOR MAKING WOUND BRUSHES

Harvard W. K. Enchelmaier, 4 E. Greenbrook Rd., North Caldwell, N.J. 07006

Division of Ser. No. 736,483, Oct. 28, 1976. This application Nov. 14, 1977, Ser. No. 851,287

Int. Cl.[2] A46D *3/04*

U.S. Cl. 300—21 17 Claims



11. A method of making a cord bound brush wherein the lengths of the bristles are disposed at a substantial angle with respect to radii of the core, comprising rotating a brush core, supplying cord for the formation of a helical coil on the brush core during its rotation, supplying bristles in a row substantially tangentially to the core with their roots between the last complete turn of the coil of the cord and the portion of the cord at its first engagement with the core, and engaging and holding the roots of the bristles between successive turns of the cord when the lengths of the bristles are disposed at a substantial angle with respect to radii of the core.

4,126,359

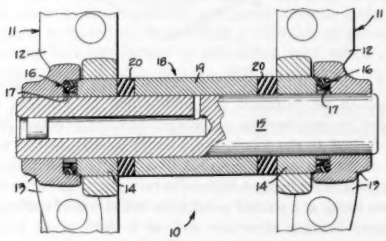
TORSIONAL TRACK BUSHING

Gordon H. Holze, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 15, 1977, Ser. No. 806,810

Int. Cl.[2] B62D *55/20*

U.S. Cl. 305—11 12 Claims



1. In an endless track assembly of the type comprising a pin having a pair of articulated first and second links mounted on each end thereof, the invention comprising a torsional track bushing mounted on said pin for relative pivotal movements and including a cylindrical metallic sleeve spaced longitudinally from each of said first links and means providing the sole securance between said metallic sleeve and each of said first links for permitting only limited relative torsional movements between said metallic sleeve and said first links upon relative articulation of said first and second links.

4,126,360

FRANCIS-TYPE HYDRAULIC MACHINE

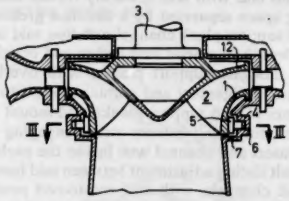
Helmut Miller, Niederrohrdorf, Switzerland, and Kurt Baumann, Kressbronn, Germany, assignors to Escher Wyss Limited, Zurich, Switzerland

Filed Nov. 23, 1976, Ser. No. 744,251

Claims priority, application Switzerland, Dec. 2, 1975, 15612/75

Int. Cl.[2] F16C *35/00;* H02K *7/08;* F03B *11/06*

U.S. Cl. 308—9 8 Claims



1. In a Francis-type hydraulic machine having a rotor which includes a bladed wheel of large diameter, the improvement which comprises bearing apparatus for supporting the rotor which is arranged in a peripheral region of the bladed wheel spaced radially from the axis and which includes

a. an annular surface carried by the bladed wheel;

b. a plurality of circumferentially spaced bearing shoes mounted in a foundation of the machine and cooperating with the annular surface; and

c. a hydraulic servomechanism for each bearing shoe which serves to adjust the shoe relatively to the annular surface.

4,126,361

LARGE ANTIFRICTION BEARING COMPOSED OF SEGMENTS

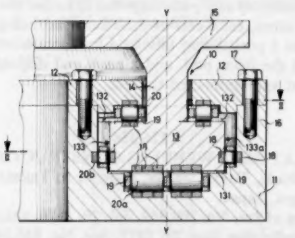
Manfred Böttner, and Wilhelm Schlüter, both of Dortmund, Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Oct. 20, 1977, Ser. No. 844,124

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1976, 2647588

Int. Cl.[2] F16C *33/60*

U.S. Cl. 308—174 6 Claims



1. A large antifriction bearing comprising race rings composed of interconnected segments, in which each individual segment includes: a first bearing ring segment having a substantially one-piece T-shaped cross section with a top flange and a bottom section and a web section connecting said top flange to said bottom section; and also includes a second bearing ring segment of a substantially U-shaped cross section partially surrounding said bottom section of said T-shaped cross section of said first bearing ring segment; said large antifriction bearing also including holding ring segments detachably connected to the respective second bearing ring segments of U-shaped cross section and extending into the region of said web of said first

bearing ring segments; race wires embedded in said first and second bearing ring segments and in said holding ring segments; and rotatable antifriction bodies interposed between and in rolling engagement with the pertaining race wires in said first and second bearing ring segments and said holding ring segments, said race wires bridging the abutting areas of the respective adjacent bearing ring segments.

4,126,362

BEARING CAGES WITH FLEXIBLE WIPERS TO PREVENT ACCUMULATION OF FOREIGN MATTER BETWEEN BALL POCKETS

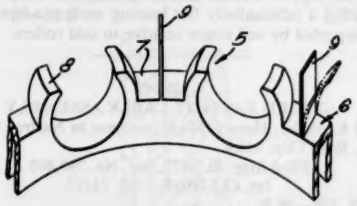
Ronald F. Hamblin, Luton, and John P. Forknall, Dunstable, both of England, assignors to SKF Industrial Trading and Development Company B. V., Nieuwegein, Netherlands

Filed Dec. 6, 1976, Ser. No. 747,695

Claims priority, application United Kingdom, Dec. 17, 1975, 51622/75

Int. Cl.² F16C *33/41*

U.S. Cl. 308—201 **5 Claims**



1. A plastic cage for a ball bearing and comprising:

an annular wall and a plurality of spaced part-spherical pockets, a part of each pocket being formed by a respective recess in the annular wall and the remainder of the pocket being formed by two respective projections which extend away from the annular wall with the mouth of the pocket between them; and

a plurality of flexible wipers, each wiper being disposed between a respective pair of adjacent pockets and extending axially from the annular wall in the same direction as and further than the adjacent projections of the pockets and over at least the full radial width of the cage, each wiper being spaced from the adjacent projections of adjacent pockets and comprising a thin web which is generally thinner than the adjacent projections of adjacent pockets, and sufficiently flexible that the wipers can readily deflect when foreign material impinges on them or the wipers engage other parts of the bearing and also insufficiently robust to deflect a ball into an adjacent cage pocket.

4,126,363

FOLDING SEWING MACHINE CABINET WITH STORAGE COMPARTMENT

Robert S. Peets, Watchung, N.J., assignor to The Singer Company, New York, N.Y.

Filed Dec. 1, 1977, Ser. No. 856,442

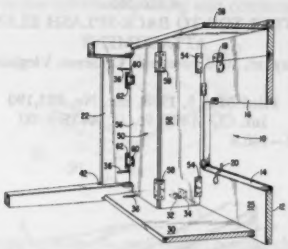
Int. Cl.² D05B *75/00*

U.S. Cl. 312—21 **3 Claims**

1. A sewing machine cabinet comprising a substantially planar table top having as a mounting surface the underside thereof;

four sides, two opposite ones of said sides pivotally mounted to the table top mounting surface to fold beneath the table top leaving a gap between the mounting surface and said two opposite ones of said sides in the folded position, and two remaining sides also pivotally mounted to the table top mounting surface by hinges having axes arranged at a level beneath the mounting surface at least equal to the thickness of the first mentioned two opposite sides, so as to allow said two remaining sides to fold flush against the first mentioned two opposite sides when in the folded position; and

articulated panels at least one of which is mounted to the table top mounting surface, said panels defining with one



or more of said table top sides a rigid storage compartment, and said panels being foldable into the space defined by said gap between the first mentioned two opposite ones of said sides, the mounting surface of the table top, and the thickness of said first mentioned two opposite sides.

4,126,364

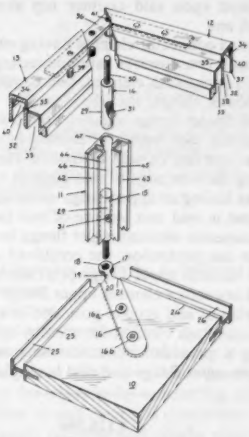
CONNECTOR FOR FRAME MEMBERS

Frederick W. Reilly, Islington, Canada, assignor to Miranda Investments Limited, Toronto, Canada

Filed Dec. 1, 1977, Ser. No. 856,301

Int. Cl.² F16B *12/00*

U.S. Cl. 312—140 **7 Claims**



1. In a framing system for a knockdown structure consisting of prefabricated sections of horizontal frame members and vertical frame members, interconnected into a unitary structure, and connecting means joining a pair of horizontal members in abutting relationship, a one piece connector for securely connecting one end of a vertical frame member to the abutting ends of the pair of interconnected horizontal frame members, said connector comprising an elongated body arranged to frictionally and slidably fit into a connector receiving cavity, said cavity having an inwardly facing entrance slot adjacent said one end of the vertical frame member, a threaded extension extending axially from the body in a longitudinal direction and arranged to be threaded into a threaded orifice in the connecting means said orifice being located in alignment with the abutting ends of the pair of horizontal members, and releasable means for securing the body in said cavity against

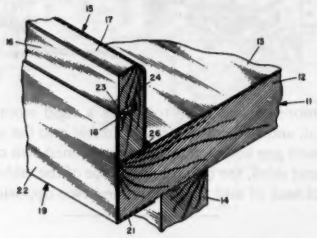
longitudinal movement in said cavity in assembled position whereby the vertical frame member and horizontal frame member is rigidly secured together.

4,126,365

COUNTER TOP TO BACK-SPLASH ELEMENT ATTACHMENT

Eugene E. Bryant, 1028 Josephine Crescent, Virginia Beach, Va. 23462

Filed May 5, 1978, Ser. No. 903,190
Int. Cl.[2] A47B *96/18*; A47F *9/00*
U.S. Cl. 312—140.4 **7 Claims**



1. A counter top to backsplash element attachment, comprising:

an elongated counter top;

an elongated upwardly extending backsplash element having a groove operationally extending substantially horizontally into the rear surface thereof, said backsplash element positioned upon said counter top along the rear edge thereof; and

an elongated connector element having substantially a channel shaped cross section interconnecting said counter top and said backsplash element, said connector element having a lower flange, the upper surface of said connector element lower flange abutting the lower surface of said counter top, said connector element having a web section, a lower portion of said connector element web section abutting the rear edge of said counter top, said connector element having an upper flange extending into said groove provided in said rear surface of said backsplash element, said connector element upper flange being provided with at least one protrusion, the combined depth of said connector element upper flange protrusion and the thickness of said connector element upper flange being greater than the width of said groove provided in said rear surface of said backsplash element for thereby achieving and maintaining a press-fit connection between said connector element upper flange and said backsplash element.

4,126,366

ROTATABLE, MULTIPLE STORAGE BIN ASSEMBLY

Milton E. Handler, Northbrook, and Richard Sylvan, Glenview, both of Ill., assignors to Hirsh Company, Skokie, Ill.

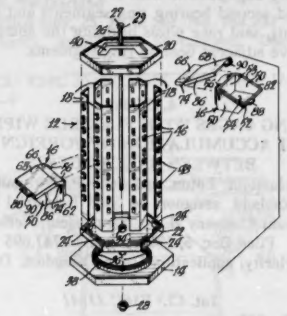
Filed Mar. 4, 1977, Ser. No. 774,419
Int. Cl.[2] A47B *49/00*; A47F *5/02*
U.S. Cl. 312—252 **4 Claims**

1. A rotatable assembly of multiple, removable, and interchangeable bins comprising:

a plurality of bins, each bin having a rear support wall defining a pair of slots for supporting said bin;

a base including an annular channel having a generally upwardly open U-shaped cross section and in which are mounted a plurality of cylindrical rollers each adapted to rotate about a fixed axis; and

a bin support column mounted on said base for rotation relative thereto, said bin support column having a plurality of faces, each face having a plurality of pairs of prong means for engaging said pairs of bin slots to support said bins, each pair of prong means arranged in horizontal rows, said rows being vertically spaced on each said face,



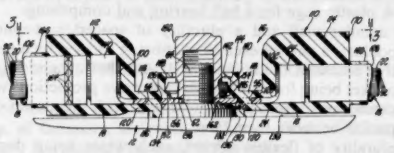
said bin support column including a bottom end piece presenting a substantially flat bearing surface adapted to be supported by and rotate relative to said rollers.

4,126,367

SEALED BATTERY CABLE ASSEMBLY

Gerald K. Miller, Hersey, Mich., assignor to Nartron Corporation, Reed City, Mich.

Filed May 20, 1977, Ser. No. 798,805
Int. Cl.[2] H01R *7/08, 11/12*
U.S. Cl. 339—29 B **5 Claims**



1. An electrical cable assembly for use in electrically interconnecting at least three electrical first terminals of associated apparatus wherein at least one of said three terminals is a stud with an enlarged base-like shoulder portion, comprising elongated in-line electrical conductor means, a cover of electrically non-conductive relatively flexible material circumferentially covering the outer surface of said electrical conductor means and extending longitudinally therealong for at least a major portion thereof, at least three electrical second terminals electrically connected to said conductor means for respective electrical connection to said three electrical first terminals, said at least three electrical second terminals being mechanically connected to said conductor means, at least two of said at least three electrical second terminals being soldered to said conductor means, and additional sealing means enveloping at least a major portion of at least two of said at least three electrical second terminals, at least one of said at least two electrical second terminals comprises a non-tubular solid plate-like electrical conductor, said solid plate-like conductor comprising first and second mechanically formed retainer means tightly circumferentially engaging portions of said conductor means not covered by said cover, said sealing means being formed of relatively resilient material and enveloping said retainer means and said portions of said conductor means not covered by said cover, said solid plate-like conductor also comprising an aperture formed therethrough for the reception therein of said one of said electrical first terminals, said aperture being situated generally between said first and second retainer means, said in-line conductor means comprises a first longitudinally extending conductor section and a second longitudinally extending conductor section, said first retainer means being mechani-

cally connected to a said portion of said conductor means not covered by said cover and at one end of said first conductor section and said second retainer means being mechanically connected to another said portion of said conductor means not covered by said cover and at one end of said second conductor section, said sealing means further comprising a generally downwardly depending pilot-like portion for receiving therewithin a portion of said stud and at least a portion of said base-like shoulder portion, and a generally upwardly extending open-ended chamber-defining housing-like portion, said housing-like portion being effective for generally circumscribing said stud when said stud is received through said aperture.

4,126,368

ELECTRICAL FUSE HOLDER

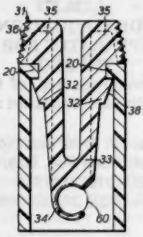
William T. Godfrey, Enfield, and Edith R. Paull, Woodford Green, both of England, assignors to Belling & Lee Limited, Enfield, England

Filed Apr. 4, 1977, Ser. No. 784,503

Claims priority, application United Kingdom, Apr. 15, 1976, 15734/76

Int. Cl.[2] H01H *85/22*

U.S. Cl. 339—91 R **9 Claims**



7. An electric fuse holder for a fuse having an insulated body portion arranged between conductive end caps, comprising

(a) a body member formed of insulating material, said body member including

(1) means for securing said body member to a support member, and

(2) first wall members defining a fuse receiving slot;

(b) contact means arranged within said fuse receiving slot; and

(c) fuse carrier means formed of insulating material adapted to be received by said fuse receiving slot as the carrier means is moved along a straight line path of motion and including

(1) fuse gripping means for gripping the insulated body portion of the fuse, and

(2) spaced, resilient limb means each having one end adjacent said fuse gripping means and having a free end which extends from said fuse receiving slot,

(3) coacting means on said body member and limb means detachably retaining said carrier means in said body member.

4,126,369

ELECTRONIC COMPONENT TERMINAL BRIDGING ASSEMBLY

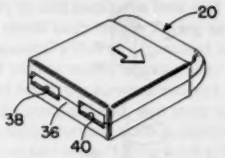
George M. Rapata, Schaumburg, and William E. Ruehl, Wheeling, both of Ill., assignors to Illinois Tool Works, Chicago, Ill.

Filed Dec. 19, 1977, Ser. No. 861,921

Int. Cl.[2] H01R *3/00*

U.S. Cl. 339—113 R **12 Claims**

1. A generally rectangular connector matrix device for electronically interconnecting two adjacent spade-like terminals lying in a common plane, said block including a two-piece housing having a pair of spaced parallel elongated chambers which open through spaced port means in one end of said housing, said port means lying in in-line relationship in a common plane, a third chamber interconnecting said parallel chambers and disposed transversely of said housing adjacent the other end thereof, a pair of identical resilient contact means each being disposed in one end of said parallel chambers and providing a smooth open throat facing said port means and disposed in in-line relationship along said common plane, mu-



tually cooperative means in each of said parallel chambers and on each of said contact means for retaining them in predetermined relation within said housing, electronic component means complementarily retained within said third chamber and means for interconnecting said electronic component means to said contact means.

4,126,370

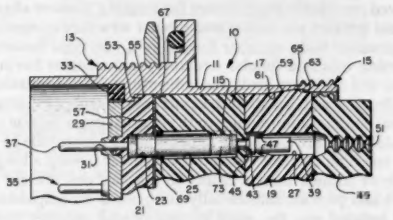
FILTER CONNECTOR WITH RADIAL MOUNTING MEANS

John P. Nijman, Scarborough, Canada, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jun. 17, 1977, Ser. No. 807,382

Int. Cl.[2] H01R *13/34;* **H03H** *7/04*

U.S. Cl. 339—143 R **4 Claims**



1. An electrical connector assembly, including a metal connector shell, comprising:

an electrical conductor;

a tubular electrical interference filter;

means for mounting said electrical conductor in said tubular electrical interference filter to extend therethrough including means for electrically connecting said tubular interference filter to said electrical conductor;

means for electrically coupling said tubular electrical interference filter to said metal connector shell;

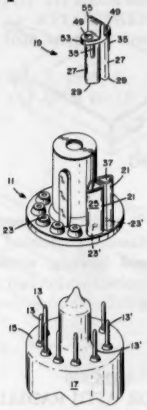
dielectric insert means mounted in said shell and including a passageway therethrough having a generally cylindrical sidewall; and

means for flexibly engaging and mounting said tubular electrical interference filter within said passageway and spaced from said sidewall of said passageway, said engaging and mounting means including a plurality of flexible longitudinal ribs and a spring flange associated with said electrical coupling means, said ribs extending from said insert into said passageway and offset from the radial direction to cooperate with one end of said filter and said spring flange extending into said passageway to cooperate with said filter at a point remote from said one end, said ribs and said spring flange together isolating said filter from shock.

4,126,371
CRT PIN ALIGNMENT MEANS

Peter G. Puhak, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 5, 1977, Ser. No. 857,596
Int. Cl.[2] H01J 5/54; H01R 33/76
U.S. Cl. 339—144 T 8 Claims

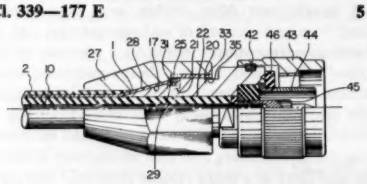


1. In a cathode ray tube-base combination wherein a substantially annular array of tube connector pins exteriorly protrude through a plurality of apertures in the base member whereof at least one pin is isolated by traversing a base aperture encompassed by a spatially related tubular isolation structure integrally formed as part of said base member and having a length exceeding that of the isolated pin positioned therein, an improved removable insert means for assuring positive alignment of said isolated pin within said tubular structure comprising: a longitudinal body member formed of a non-rigid material for insertion into said tubular structure, said member having forward and rearward ends and a length at least approximating the depth of said isolation structure, said member evidencing a lateral configuration similar to the internal cross-section of said tubular structure and being dimensionally compatible to facilitate insertion thereinto; said body member having a longitudinal bore formed therein from the forward end thereof to receive and provide substantially contiguous encompassment of said isolated pin, the outer surface of said member having a compressible retentive protuberance formed thereon in a manner to make pressured contact with the inner wall surface of said tubular structure thereby providing an interference fit when said insert is positioned therein, said member having a substantially central longitudinal open-end cavity formed therein inward from said rearward end to promote degree of resiliency for said retentive protuberance.

4,126,372
OUTER CONDUCTOR ATTACHMENT APPARATUS FOR COAXIAL CONNECTOR

Tetsuo Hashimoto, Tanashi, and Yasuo Fukunaga, Musashino, both of Japan, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jun. 20, 1977, Ser. No. 807,772
Claims priority, application Japan, Jun. 25, 1976, 51-82844[U]
Int. Cl.[2] H01R 17/04
U.S. Cl. 339—177 E 5 Claims

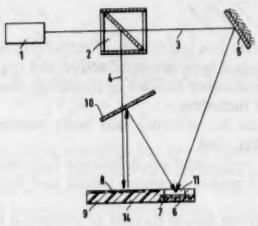


1. An outer conductor attachment apparatus for use with a coaxial cable connector, said apparatus comprising: a truncated cone shaped member having a longitudinal passageway therethrough, an outer conical major surface and a narrow annular groove adjacent the larger end of said member defining an outer cylindrical minor surface; a circumferentially resilient annular locking ring receivable in said groove and having an internal diameter in the unstressed free state greater than the diameter of said annular groove, said ring also having a circumferential camming surface; and a clamping member slidable over said cone shaped member and said ring, said clamping member having a truncated cone shaped passage therethrough sized to receive the outer major surface of said cone shaped member, said passage including a section for engaging said camming surface to force said ring into said groove; whereby the essentially tubular outer conductor of a coaxial cable inserted in said apparatus is deformed over said cone shaped member and into said groove, and clamped between the outer major and minor surfaces of said cone shaped member and the inner surfaces of said clamping member and said ring.

4,126,373
HOLOGRAPHIC IDENTIFICATION ELEMENTS AND METHOD AND APPARATUS FOR MANUFACTURE THEREOF

Roland Moraw, Naurod, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 22, 1976, Ser. No. 753,469
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1975, 2558056; Oct. 20, 1976, 2647325
Int. Cl.[2] G02B 27/00; G09F 3/02
U.S. Cl. 350—3.61 18 Claims



1. A process for the manufacture of a holographic identification element comprising the steps of:
(a) fixedly combining a light-sensitive recording material with an object carrying indicia thereon;
(b) forming a reference beam and an object beam from a source of coherent light;
(c) subsequent to step (a) directing said object beam onto said indicia of said object;
(d) subsequent to step (c) directing the object beam reflected from the indicia of said object onto said light-sensitive recording material; and
(e) simultaneously with step (d) directing said reference beam onto said light-sensitive recording material thereby producing a hologram of said indicia, whereby a holographic identification element is produced.

4,126,374
BINOCULAR ASSEMBLY WITH IMPROVED FOCUSING MECHANISM

Paul R. Maguire, 4284 Sea View La., Los Angeles, Calif. 90065

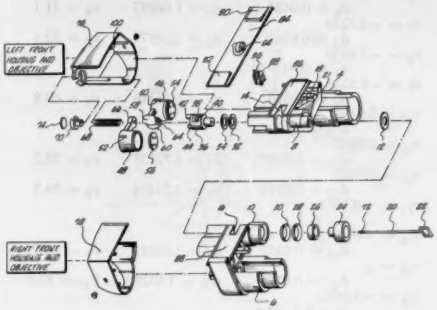
Filed Nov. 29, 1976, Ser. No. 745,619
Int. Cl.[2] G02B 7/04
U.S. Cl. 350—47 20 Claims

1. A binocular assembly comprising;
a first and second housing member movably mounted rela-

tive to each other about a common axis and forming an aperture on the surface;

optical means mounted in the respective first and second housing member for magnifying an object image,

means for focusing the optical means including an actuator body mounted so that at least one of its side surfaces is always adjacent the outside surface of the first and second housing members and movable therewith and a force member operatively connected to and movable by the actuator body for transmitting a displacement force from an operator, the actuator body extends across the aperture and the force member extends through the aperture for providing the displacement force to the optical means for



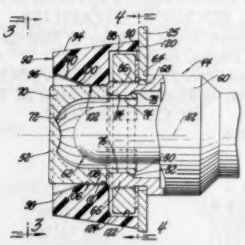
focusing, the actuator body is relatively rigid in any substantially translational movement across the surfaces of the first and second housing members to provide a positive increment of movement through the force member to adjust the focus, the actuator is further relatively flexible during any movement towards and away from the housing member surfaces so that the actuator body can bend to maintain its position adjacent the outside surface of the first and second housing members during any relative rotational movement about their common axis.

4,126,375

LENS SHIELD MEANS

David W. Bull, Hersey, and Norman A. Rautiola, Reed City, both of Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed Apr. 18, 1977, Ser. No. 788,439
Int. Cl.[2] G02B *7/02*
U.S. Cl. 350—58 **17 Claims**



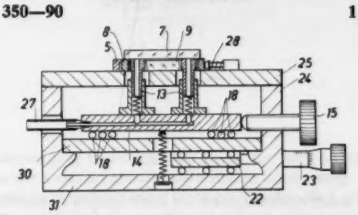
1. Lens shield means, comprising shield body means, said body means having a medial axis and comprising a relatively forward end, a relatively rearward end, outer wall surface means extending from said forward end to said rearward end, said shield body means being effective to be detachably secured to and detached from an associated lens by axially pushing said shield body means onto and off of said associated lens, and inner wall surface means formed in said body means generally about said axis, said inner wall surface means comprising relatively resiliently deflectable gripping means effective for directly operatively engaging said associated lens, said resiliently deflectable gripping means being effective to undergo resilient deflection and deformation against said associated lens as said shield body means is pushed onto said associated lens, said resiliently deflected and deformed gripping means exhibiting a resilient gripping force directed generally inwardly toward said medial axis and directly against said associated lens as to thereby maintain said shield body means detachably secured directly to said associated lens, said outer wall surface means of said shield body means having an outer elevational configuration generally that of a truncated right circular cone, said outer wall surface means tapering as to have its narrower diameter at said relatively forward end and its wider diameter at said relatively rearward end, said inner wall surface means comprises a conical surface portion tapering as to have its wider diameter at said relatively forward end and its narrower end directed toward said rearward end, and said shield body means being molded of relatively resilient material.

4,126,376

MANIPULATION DEVICE FOR PRECISION ADJUSTMENTS INCLUDING A DOUBLE MICROSCOPE HAVING ADJUSTABLE OPTICAL AXES

Karl-Werner Gommel; Uwe Michl, and Hans Radtke, all of Jena, German Democratic Rep., assignors to Jenoptik Jena G.m.b.H, Jena, German Democratic Rep.

Filed Feb. 24, 1977, Ser. No. 768,669
Int. Cl.[2] G02B *21/32*
U.S. Cl. 350—90 **1 Claim**



1. A manipulation device for the precision adjustment of pattern-bearing substrates comprising

a double microscope having adjustable optical axes,

a plane pattern bearng substrate,

two adjustment marks being arranged on said pattern bearing substrate at a definite distance,

a housing having a top plate and a bottom plate,

said top plate being for supporting said pattern bearing substrate,

a reference mark being non-displaceably attached to the top plate of said manipulation device, said reference mark being substantially arranged in the plane defined by said two adjustment marks, and extending in the *x*-coordinate of an orthogonal *xy*-coordinate system and having division lines parallel to the *y*-direction,

an intermediate plate being located in and secured to said housing, said top plate, said intermediate plate and said bottom plate being substantially in parallel to each other and to the plane defined by the *xy*-coordinate system,

a first slide being displaceable on said intermediate plate,

a vacuum holding means connected to said first slide, said holding means being for connecting said pattern bearing substrate to said first slide,

a U-shaped second slide being seated for displacements in *x*-direction on said bottom plate and embracing said first slide,

means for displacing said second slide according to the distance between said adjustment marks,

a first, a second and a third displacement member for displacing and rotating said pattern bearing substrate, acting upon said first slide,

said first member being seated in said housing in parallel to the *x*-direction of said reference mark, and being for

displacing the pattern bearing substrate in the *x*-direction,

said second member being for displacing said pattern bearing substrate in the *y*-direction in parallel to said division lines of said reference mark, said second member being seated in said second slide,

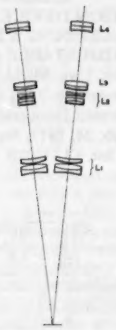
said third member effecting angular displacements of said pattern bearing substrate and being seated in said housing.

4,126,377

ZOOM OPTICAL SYSTEM FOR MICROSCOPES

Astuo Goto, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1977, Ser. No. 771,802
Claims priority, application Japan, Feb. 27, 1976, 51-20146
Int. Cl.² G02B *15/14*
U.S. Cl. 350—184 **1 Claim**



1. A zoom optical system for microscopes comprising a first lens group consisting of a positive cemented doublet lens having a cemented surface of negative refractive power and a positive lens having a convex surface on the object side, a second lens group consisting of a negative cemented doublet lens having cemented surface of positive refractive power and a negative lens, a thrid lens group consisting of a positive cemented lens, and a fourth lens group consisting of a negative cemented doublet lens, and being adapted in such a way that said first and third lens groups are movable as a unit for zooming while said second and fourth lens groups are kept fixed, said optical system satisfying the following conditions:

$$n_1 - n_2 > 0.1 \quad (1)$$

$$\nu_2 - \nu_1 > 27$$

$$1.25 > r_4/r_5 > 0.85 \quad (2)$$

$$\nu_5 - \nu_4 > 27 \quad (3)$$

$$0.6 > (n_5 - n_4/r_7)\, F_1 > 0.5$$

Wherein the reference symbols n_1 and n_2 represent refractive indices of both the lens elements of said cemented doublet lens in the first lens group, the reference symbols n_4 and n_5 designate refractive indices of both the lens elements of said cemented doublet lens in the second lens group, the reference symbols ν_1 and ν_2 denote Abbe's numbers of both the lens elements of said cemented doublet lens in the first lens group, the reference symbols ν_4 and ν_5 represent Abbe's numbers of both the lens elements of said cemented doublet lens in the second lens group, the reference symbol r_2 represents radius of curvature on the cemented surface of the cemented doublet lens in the first lens group, the reference symbol r_4 designates radius of curvature on the object side surface of said single lens element in the first lens group, the reference symbol r_7 denotes radius of curvature on the cemented surface of said cemented doublet lens in the second lens group and the referency symbol F_I represents total focal length of first lens group as a whole, said system having the following numerical data:

$r_1 = -1.9448$			
$d_1 = 0.0404$	$n_1 = 1.69895$	$\nu_1 = 30.1$	
$r_2 = 0.6507$			
$d_2 = 0.0808$	$n_2 = 1.55963$	$\nu_2 = 61.1$	
$r_3 = -0.7185$			
$d_3 = 0.0112$			
$r_4 = 0.6871$			
$d_4 = 0.0628$	$n_3 = 1.70154$	$\nu_3 = 41.1$	
$r_5 = 2.3828$			
$d_5 = l_2$			
$r_6 = -0.9683$			
$d_6 = 0.0404$	$n_4 = 1.68893$	$\nu_4 = 31.1$	
$r_7 = -0.3230$			
$d_7 = 0.0269$	$n_5 = 1.50977$	$\nu_5 = 62.1$	
$r_8 = -3.6830$			
$d_8 = 0.0337$			
$r_9 = -0.5326$			
$d_9 = 0.0269$	$n_6 = 1.56384$	$\nu_6 = 60.8$	
$r_{10} = 0.9393$			
$d_{10} = l_3$			
$r_{11} = 1.0265$			
$d_{11} = 0.0337$	$n_7 = 1.72151$	$\nu_7 = 29.2$	
$r_{12} = 0.4939$			
$d_{12} = 0.0718$	$n_8 = 1.51454$	$\nu_8 = 54.7$	
$r_{13} = -0.7043$			
$d_{13} = l_4$			
$r_{14} = -0.7612$			
$d_{14} = 0.0337$	$n_9 = 1.62012$	$\nu_9 = 49.7$	
$r_{15} = \infty$			
$d_{15} = 0.0561$	$n_{10} = 1.62280$	$\nu_{10} = 57.1$	
$r_{16} = -1.0682$			

$\beta = 1 \times - 4 \times$

$F_I = 1$, $F_{II} = -0.585$,

$F_{III} = 1$, $F_{IV} = -4.871$,

Magnification	l_1	$d_5 = l_2$	$d_{10} = l_3$	$d_{13} = l_4$
1 x	2.7428	0.1043	0.6905	0.0990
2 x	2.4363	0.4108	0.3840	0.4055
4 x	2.1298	0.7173	0.0775	0.7120

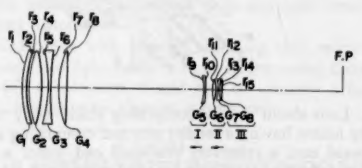
Wherein the reference symbols r_1 through r_{16} represent radii of curvature on the respective lens surfaces, the reference symbols d_1 through d_{15} designate thicknesses of the respective lenses and airspaces therebetween, the reference symbols n_1 through n_{10} denote refractive indices of the respective lenses, the reference symbols ν_1 through ν_{10} represent Abbe's numbers of the respective lenses, the reference symbol l_1 designates working distance and the reference symbols F_I through F_{IV} denote focal lengths of the first through fourth lens groups respectively.

4,126,378

TELEPHOTO LENS SYSTEM HAVING AN IMPROVED FOCUSING CAPABILITY

Shuji Ogino, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 21, 1977, Ser. No. 779,297
Claims priority, application Japan, Mar. 26, 1976, 51-34011
Int. Cl.² G02B *13/02*
U.S. Cl. 350—214 **9 Claims**



1. In a telephoto lens system having improved focusing capabilities, the improvement comprising;

a front lens group of an overall positive refractive power; and

a rear lens group of an overall negative refractive power including a first negative lens component on the object side of the rear lens group and a second positive lens

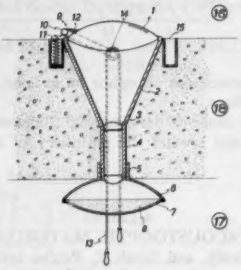
component on the image side, the second positive lens component being movably mounted relative to other lens elements for focusing the lens system on close objects as it is moved towards the object side.

4,126,379

LIGHT-CONDENSING INSTRUMENT

Sheng H. Wu, No. 1, Alley 2, Chung Chen Rd., Tan Shui, Taipei Hsien, Taiwan

Filed Nov. 15, 1976, Ser. No. 742,213
Int. Cl.² G02B *17/00, 27/00*
U.S. Cl. 350—260 **1 Claim**



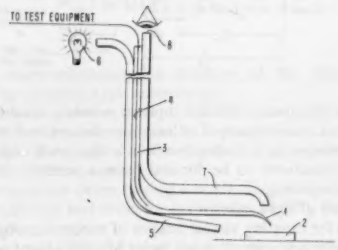
1. A light-condensing and transmitting device installed in the top of a roof or in a wall of a building to collect, intensify, and transmit natural light or sun rays comprising, a funnel with its widest diameter porition facing outwardly mounted in said roof or wall, a convexoconvex lens mounted in said outwardly facing portion, a convexoplane lens installed at each end of the inwardly facing cylindrical pipe portion of said funnel with their plane surfaces in confronting relationship, a lamp shade connected to the inwardly-facing end of said pipe portion, said shade including a meniscus lens having a layer of fluorescent powder applied to its inner surface, a protective hood installed over said convexoconvex lens consisting of a cover attached to a pivotable hoop, a cotton brush or sponge attached to said hoop between the latter and said convexoconvex leans, and a rope and a pulley connected to said hoop at the pivot axis of said hoop, whereby as said rope and pulley open and close said protective hood, said brush or sponge clears said convexoconvex lens.

4,126,380

PROBE WITH CONTACT INDICATING MEANS

David S. Borm, Red Hook, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,759
Int. Cl.² G05D *25/00*
U.S. Cl. 350—266 **6 Claims**



1. Means for indicating that a probe has come into physical contact with a target, comprising:

a source of light;

a deformable opaque probe tip containing a transparent window;

shutter means normally covering said window when said probe tip is not in contact with said target;

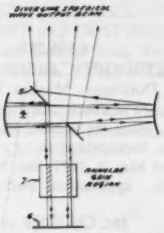
said probe tip being so constructed that contact between said probe tip and said target will cause said transparent window to be uncovered permitting light from said source to pass through said transparent window to provide an indication of contact between said probe tip and said target.

4,126,381

CONVERGING WAVE UNSTABLE RESONATOR

Richard A. Chodzko, Rancho Palos Verdes, and Stephen B. Mason, Woodland Hills, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 24, 1977, Ser. No. 809,730
Int. Cl.² H01S *3/081*
U.S. Cl. 350—294 **2 Claims**



1. A converging wave unstable resonator for coupling coherent power from an annular gain region comprising:

a. a confocal unstable cavity having a double-sided coupling mirror providing plane wave output and a diverging wave output;

b. a flat, totally reflecting feedback mirror positioned external to the said cavity reflecting the said plane wave and forming an annular mode between the said feedback mirror and the said coupling mirror; and

c. the said annular gain region positioned external the said cavity between the said coupling mirror and the said feedback mirror.

4,126,382

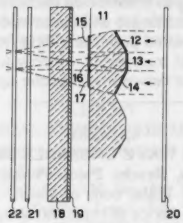
OPERATIONAL METHOD FOR DISPLAYING IMAGES WITH LIQUID-CRYSTAL ELECTRO-OPTICAL DEVICES, AND APPARATUS THEREFOR

Giorgio Barzilai, Via Romana 80, Marino Laziale (Roma); Cesare M. Ottavi, Viale Somalia 214, Rome; Paolo Maltese, Via Dandolo 24, Rome, and Paolo Reali, Via Livraghi 3, Rome, all of Italy

Continuation of Ser. No. 397,621, Sep. 17, 1973, abandoned. This application Dec. 1, 1975, Ser. No. 636,567
Claims priority, application Italy, Sep. 22, 1972, 52916 A/72
Int. Cl.² G02F *1/13*
U.S. Cl. 350—331 **13 Claims**

1. An electro-optical device for the display of images of the kind comprising at least one liquid-crystal cell formed by two supporting members, one at least of which is transparent and which are provided with electrode conductive layers and whose surface is so treated as to determine a desired substantially homeotropic orientation, between which there is inserted a small thickness film of a nematic liquid crystal having a negative dielectric anisotropy and a substantially homeotropic alignment, said supporting members being inserted between two polarizers, said liquid crystal film having a predetermined thickness not exceeding 10 microns, and a thickness uniformity ranging within ±30% of the predetermined thickness, said

device having further means for applying to the electrodes energization pulses having a duration and an RMS amplitude coordinated with each other and with said predetermined thickness of liquid crystal for causing said device to provide



luminous response, said duration and said RMS amplitude each not exceeding those maximum values thereof which produce a single peak of luminous response which cannot be increased by exceeding said maximum values.

4,126,383

ELECTROOPTIC DISPLAY DEVICE

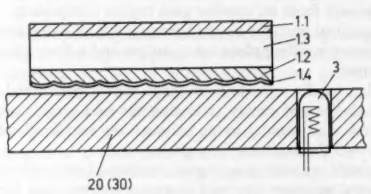
Rino Doriguzzi, Dottingen; Markus Egloff, Wettingen; Meinolph Kaufmann, Fislisbach, and Terry J. Scheffer, Forch, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed May 2, 1977, Ser. No. 792,591

Claims priority, application Switzerland, Jun. 3, 1976, 7003/76

Int. Cl.[2] G02F *1/13*

U.S. Cl. 350—338 **12 Claims**



1. An electrooptical display device for transmissive or reflective operation comprising:

a circuit board having at least one light conducting region and having electrical leads mounted thereon;

a liquid crystal display cell disposed adjacent the light conducting region of the circuit board and having a semitransparent reflector attached thereto; and

at least one light emitting element located in the circuit board for illuminating the light conducting region.

4,126,384

SELF-ILLUMINATED LIQUID CRYSTAL DISPLAY DEVICE

Lawrence A. Goodman; Kenneth W. Hang, both of East Windsor, and William B. Hall, Stockton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 13, 1976, Ser. No. 714,121

Int. Cl.[2] G02F *1/13*

U.S. Cl. 350—345 **8 Claims**

1. A liquid crystal display device comprising

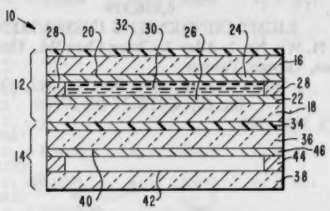
a liquid crystal cell including a pair of plates of transparent material having opposed, substantially flat surfaces in spaced apart relation,

an electrode on each of said opposed surfaces, and

a liquid crystal material between said opposed surfaces, in combination with

an illuminator extending across one of said liquid crystal plates, said illuminator including

a pair of spaced plates of soda-lime glass with the portion of the plates along the opposed surfaces in spaced apart relation being depleted of alkali metal ions,



a cathodoluminescent phosphor on at least one of said opposed surfaces,

a radioactive material between said illuminator plates and

a hermetic seal around the periphery of said illuminator plates.

4,126,385

ACOUSTOOPTIC MATERIAL

Richard N. Blazey, and Sarah E. Petrie, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1976, Ser. No. 752,231

Int. Cl.[2] G02F *1/33*

U.S. Cl. 350—358 **12 Claims**

1. In an acoustooptic device having means for generating an acoustic wave and attached thereto an accoustooptic material for controlling a light beam, the improvement wherein said material comprises a polyphenyl compound having a sound attenuation less than about 10 dB/cm at 40 MHz said attenuation being measured at 25° C.

4,126,386

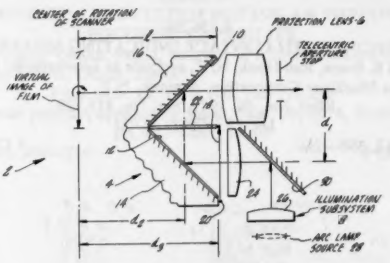
IMAGE STABILIZATION SYSTEM FOR CONTINUOUS FILM SCANNING APPARATUS

Ulrich M. Fritzler, 65-15 Booth St., Rego Park, N.Y. 11374

Continuation-in-part of Ser. No. 721,892, Sep. 9, 1976. This application Oct. 17, 1977, Ser. No. 842,980

Int. Cl.[2] G03B *41/02*

U.S. Cl. 352—105 **30 Claims**



1. An improved rotatable optical scanner system for the continuous transmission of at least two dimensional successive images relative to a medium such as a film, each object image can be considered to be formed from a number of discrete points comprising;

a source of light energy;

means for creating virtual images of successive objects with at least one virtual image point of each object positioned on a stationary locus point and at least another virtual image point offset from the stationary image locus point and relatively movable during a scanning movement;

means for circuitous curvature of the film about a centroid of the stationary locus point while transmitting the source of light energy, and

projection means for generating real images from the virtual image further having an object field curvature characteristic complementary to the curvature of the film surface to minimize the relative movement of the real offset image point and to project a real composite image of perceptively stable registration between the film and real projected image.

4,126,387

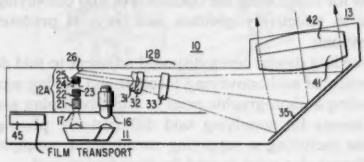
MICROFORM READER

Barry G. Broome, 23601 Golden Springs Dr., Diamond Bar, Calif. 91765, and George D. Margolin, 174 West 76th St., New York, N.Y. 10023

Filed Dec. 27, 1976, Ser. No. 754,123

Int. Cl.[2] G03B *21/22*

U.S. Cl. 353—77 **6 Claims**



1. Optical system comprising a lens having a resolution R and a magnification M, said lens defining a resolution in a viewing plane of R/M, and a lenticular screen in said viewing plane, said screen having an array of features formed from a plurality of crossed elements having a sinusoidal-like surface has each crossed element has a dimension less than or equal to $\frac{1}{4}$ R/M.

4,126,388

ELECTROPHOTOCOPYING MACHINE OF ELECTROSTATIC LATENT IMAGE TRANSFER TYPE

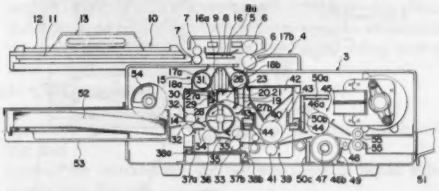
Yoshihisa Kawai, Atsumi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 9, 1977, Ser. No. 775,928

Claims priority, application Japan, Mar. 15, 1976, 28330

Int. Cl.[2] G03B *27/00*; G03G *15/00*; G03B *27/54*

U.S. Cl. 355—1 **7 Claims**



1. An electrophotocopying machine of the electrostatic latent image transfer type comprising,

an illuminating station provided in the upper portion of the machine for a document to be copied;

means for illumination of the document being provided in the illuminating station;

a photosensitive drum having a small diameter;

means adjacent said drum for uniformly charging the surface of the drum;

an image transmitter formed by a bundle of optical fibers having graded refractive indexes and provided between the illuminating station and the drum for transmitting to the drum a light image corresponding to the document and directing onto the drum the light image corresponding to the document for forming an electrostatic latent image on the uniformly charged drum;

a slit means provided between the image transmitter and the photosensitive drum for restricting the area of the photosensitive drum to which the light image is directed;

means adjacent the drum for transferring the electrostatic latent image formed on the drum onto a copy material; and

light passage means extending between the illumination means and a position on the drum following said transferring means for directing light from said illumination means onto said drum for erasing the residual charges on the drum;

the image transmitter, the slit means, the photosensitive drum, the illumination means and the light passage means forming a space substantially just sufficient to accommodate the charging means therein.

4,126,389

SCANNING TYPE VARIABLE MAGNIFICATION ELECTROPHOTOGRAPHIC COPYING MACHINE EMPLOYING COPY PAPER STORAGE ROLL

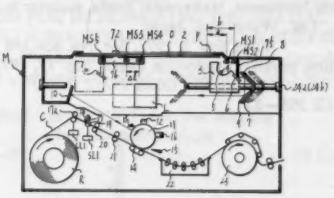
Hiroshi Ikeda, Aichi, and Kenichi Arai, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Azughi, Japan

Filed Dec. 16, 1976, Ser. No. 751,412

Claims priority, application Japan, Dec. 26, 1975, 50/156419

Int. Cl.[2] G03G *15/00*

U.S. Cl. 355—13 **19 Claims**



11. An electrophotographic copying machine comprising:

means for holding an original;

means for indexing the length of said original;

means for withdrawing copy paper from a roll type storage and feeding said paper along a predetermined path through an image receiving station;

means for scanning the original so as to produce an image corresponding to the original on said copy paper at said image receiving station;

means for adjusting the magnification of said image relative to said original and including means for adjusting the speed of said scanning means in accordance with the magnification;

means for transversely cutting said copy paper; and means for actuating said cutting means in accordance with said scanning means speed and said indexing means to cut said copy paper to approximately the length of the image produced thereon.

4,126,390

JOB STREAM PROGRAMMER APPARATUS

John L. Connin, Canandaigua, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 2, 1977, Ser. No. 793,109

Int. Cl.[2] G03G *15/00*; B65H *5/14*

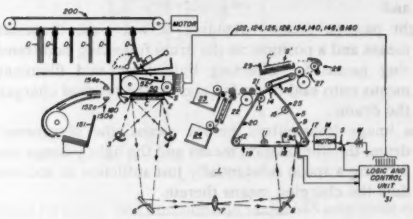
U.S. Cl. 355—14 **7 Claims**

1. Job stream programmer apparatus for use with a copier having a feeder for sequentially feeding sheets of a single or

multi-sheet document to be copied from support means to the exposure platen of the copier, comprising:

(a) memory means for receiving and storing job programming signals corresponding to requested numbers of copies of documents to be made;

(b) means for receiving a plurality of documents and effective to move such received documents along a path which intersects said support means;



(c) means for releasing and placing a selected one of the received documents on said support means; and

(d) control means responsive to the stored job programming signals corresponding to the selected document for causing said feeder to feed the sheets of such selected document to said exposure platen so that the requested number of copies are produced by the copier.

4,126,391

PHOTOGRAPHIC PROCESSING APPARATUS

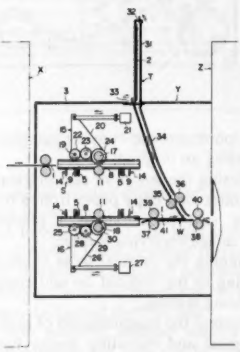
Kanichi Nishimoto, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Sep. 2, 1977, Ser. No. 830,198

Claims priority, application Japan, Sep. 11, 1976, 51/108979

Int. Cl.[2] G03B *27/32, 27/52*

U.S. Cl. 355—27 **4 Claims**



1. A processing apparatus for use in a series of photographic printing and developing operations, comprising:

a printer assembly for continuously printing, a sheet of photographic paper and delivering, in sequence, individually cut photographic prints of a first size;

a developing assembly for automatically developing said photographic prints; and

a distributing assembly operatively connected between said printer assembly and said developing assembly for receiving said sequential flow of individual photographic prints from said printer and automatically arranging said prints in a selectable pattern for supplying said developing assembly with a sequential flow of a plurality of prints, said distributing assembly also having means to supply said developer assembly with a photographic print from a separate source of a size different than said cut prints from said printer assembly, said distributing assembly including a distributing device and a feeding device, said distributing device comprising:

a supply apparatus, including a drive roller, for feeding the photographic prints into said distributing assembly;

an endless conveying member having a receiving portion disposed adjacent to said supply apparatus for receiving the prints, and a delivery portion for delivering the prints from said distributing device, said conveying member moving perpendicular of the transporting path of photographic prints being delivered from said printer assembly;

a plurality of trays secured at predetermined separation distances on said conveying member and movable with said conveying member, each of said trays having supporting portions for receiving a print and supporting said print spaced from the bottom of said tray, and a roller rotatably supported on said tray and cooperating with said supporting portions to support said sheet, said roller being adapted to cooperate with said drive roller of said supply apparatus to feed a print into said tray; and

means for controlling the operation of said conveying member to selectively position said trays at predetermined positions;

said feeding device being disposed adjacent to said delivery portion of said conveying member and having means for feeding a photographic print to said developing assembly;

said means for supplying said different-size photographic print including a supplying member for supplying said different-size print to said feeding device; and

said developing assembly includes a series of treatment units, with at least two of said units being positioned in receiving alignment with at least two corresponding trays on the delivery portion of said endless conveying member.

4,126,392

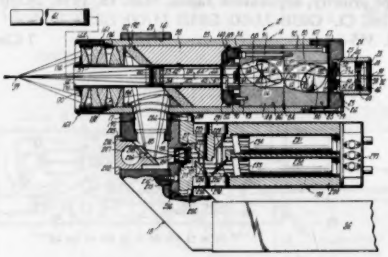
OPTICAL SYSTEM FOR LASER DOPPLER VELOCIMETER AND THE LIKE

Randolph D. House, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 20, 1976, Ser. No. 734,200

Int. Cl.[2] G01B *9/02*

U.S. Cl. 356—28.5 **21 Claims**

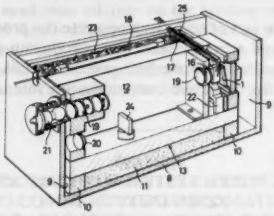


1. In an interference fringe system optical unit having optical laser beam splitter means for splitting an incoming laser beam into at least two generally parallel split beams and optical projection and collection means for projecting an interference fringe system with the split beams and for backscatter collection of radiation from the interference fringe system for evaluation; the improvement wherein the optical projection and collection means comprises an inner projection lens and an outer annular collection lens coaxial therewith, and annular opaque separator means between the inner projection lens and outer coaxial collection lens for isolating the backscatter collection of radiation.

4,126,393
HIGH-SENSITIVITY DIFFERENTIAL REFRACTOMETER

Sadao Sumikama; Shigeru Nakamura, both of Yokohama; Kozo Shirato, Ohmiya; Kazuo Hiraizumi, Funabashi; Nobuo Takasu, Kawaguchi; Mitsuru Taguchi, Yokohama; Tsuyoshi Yamada, Yokohama, and Susumu Ishiguro, Yokohama, all of Japan, assignors to Showa Denko K. K and Erma Optical Works, Ltd., both of Tokyo, Japan

Filed Feb. 25, 1977, Ser. No. 772,212
Claims priority, application Japan, Mar. 2, 1976, 51/21812; Mar. 2, 1976, 51/23994; Jul. 7, 1976, 51/89395
Int. Cl.[2] G01N *21/46*
U.S. Cl. 356—130 **6 Claims**



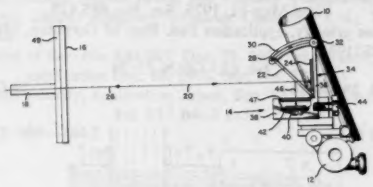
1. A high-sensitivity differential refractometer, which comprises:
- a housing;
- a light source disposed outside the housing;
- light-refracting means disposed inside the housing and comprising a cell, lenses and a reflecting window provided with an optical axis adjusting unit attached to one end portion of the housing and comprising a reflecting mirror, a reflecting mirror supporting base and a movable plate; said reflecting mirror being fastened to said reflecting mirror supporting base, said reflecting mirror supporting base being attached at one end portion thereof to said movable plate, said movable plate being disposed substantially perpendicularly relative to the path of light from the light source and being provided with means for enabling the movable plate to be rotated around the vertical axis thereof, said reflecting mirror supporting base being provided with means for enabling the reflecting mirror supporting base to be rotated around said one end portion thereof attached to the movable plate so as to vary the angle formed thereby with reference to the movable plate, the lateral side of said housing containing an inspection window for permitting inspection of said reflecting mirror from outside the housing;
- light-sensing means disposed inside the housing;
- an optical base disposed inside the housing;
- a liquid chromatographic column disposed inside the housing; and
- a conduit for introducing the test specimen of liquid substance into the cell.

4,126,394
OPTICAL CANT SENSOR FOR MORTARS

Reinhard R. Ulrich, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 9, 1977, Ser. No. 823,079
Int. Cl.[2] G01B *11/26;* F41G *3/16*
U.S. Cl. 356—152 **5 Claims**

1. An optical cant sensor for mortars comprising:
- a source of light;
- a first mirror vertically mounted to the barrel of the mortar for reflecting light from the light source;
- a viewing screen upon which the reflected light impinges;
- a second mirror mounted to the barrel for maintaining a reflecting plane level with the ground;
- a semi-reflective mirror positioned between the first and second mirrors for diverting light from the source to the second mirror, the semi-reflective mirror directing light reflected from the second mirror to the viewing screen,

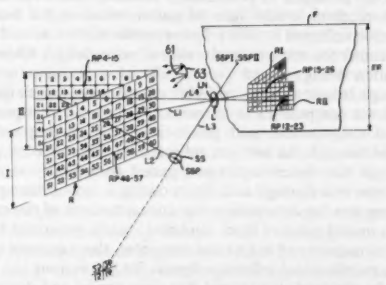


and for permitting light passsage between the source and viewing screen via the first mirror; and
- means for adjusting the semi-reflective mirror to superimpose images from the first and second mirrors;
- whereby repeated mortar firings produce cant which is manifest by displacement of the superimposed images.

4,126,395
METHOD FOR DETERMINING THE SPATIAL LOCATION OF POINTS ON A SPECULAR SURFACE

Joseph A. Ross, Fort Salonga, and Howard K. Stern, Greenlawn, both of N.Y., assignors to Solid Photography, Inc., Melville, N.Y.

Filed May 25, 1977, Ser. No. 800,322
Int. Cl.[2] G01B *11/24*
U.S. Cl. 356—375 **18 Claims**



1. A method for use in determining the spatial location of points on a specular surface comprising the steps of:
- (a) defining a lens field of view inclusive of said surface points;
- (b) disposing a reference surface in a first location with respect to said surface points, said reference surface having discernible indicia each of known positional coordinates;
- (c) irradiating said reference surface and detecting radiant energy passing through the lens node of said lens field of view;
- (d) positioning said reference surface in a second location with respect to said surface points and repeating step (c); and
- (e) identifying from said radiant energy detected in steps (c) and (d) indicia of said reference surface in identical line of sight relation to said surface points.

4,126,396
DEVICE FOR THE NON-DISPERSIVE OPTICAL DETERMINATION OF THE CONCENTRATION OF GAS AND SMOKE COMPONENTS

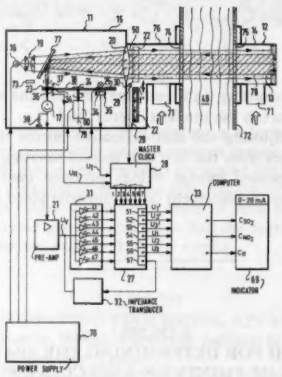
Klaus Hartmann, Munich, and Meinhard von Braitenberg, Grunwald, both of Fed. Rep. of Germany, assignors to Erwin Sick Gesellschaft mit Beschrankter Haftung, Optik-Elektronic, Waldkirch, Fed. Rep. of Germany

Filed May 11, 1976, Ser. No. 685,425

Claims priority, application Fed. Rep. of Germany, May 16, 1975, 2521934

Int. Cl.[2] G01N *21/26*

U.S. Cl. 356—434 **29 Claims**



1. Apparatus for non-dispersive optical determination of the concentrations of gas and smoke components in a mixture of gases containing smoke, comprising a light transmitter-receiver for emitting and receiving reflected radiation at one end of a measured distance through the mixture, said light transmitter-receiver being provided with a front objective, a reflector at the other end of the measured distance, a reference reflector arranged to periodically reflect emitted radiation, a photo-receiver in said light transmitter-receiver for receiving radiation reflected by said reference reflector before said radiation enters the mixture, a plurality of wave-length filters, said radiation being passed periodically at successive intervals through at least as many different of said wave-length filters as there are components to be measured during a first predetermined time period, said photo-receiver receiving radiation passed through the mixture, reflected by said reflector, passed through the mixture again and passed periodically at successive intervals through said filters during a second time period, a computer for determining the concentrations of the components in said mixture from electrical signals generated by said photo-receiver and fed to said computer, the computer storing different electrical reference signals for the various test wavelengths obtained during said first time period and during said second time period and dividing each of the electrical signals influenced by the transmission at the associated wavelength individually by the stored reference signal obtained at the same wavelength, so as to obtain a continuously corrected extinction signal for each wavelength, and transforming the said extinction signals into concentration signals through Beer's Law.

4,126,397
ASPHALTIC CONCRETE RECYCLE APPARATUS

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

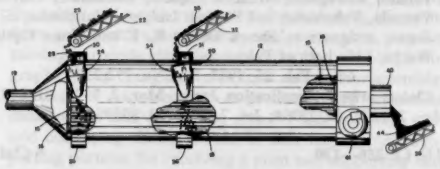
Filed Dec. 27, 1976, Ser. No. 754,313

Int. Cl.[2] B28C *5/46*

U.S. Cl. 366—7 **8 Claims**

1. In an apparatus for recycling asphalt-aggregate composition comprising an elongated rotatable cylindrical drum having a plurality of heating tubes extending along the length of the drum interior, means for heating said tubes, and means for recovering composition from one end of said drum, the improvement comprising:

first means for introducing particles of said composition



adjacent an end of said drum opposite the product recovery end, and second means for introducing particles of said composition intermediate said drum ends comprising a port on the drum and communicating interiorly of said drum.

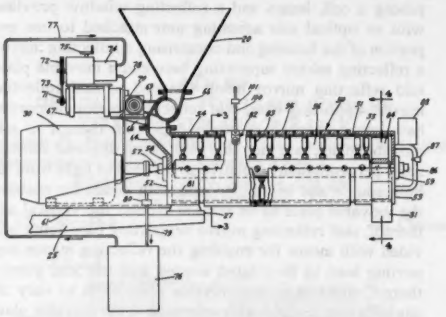
4,126,398
FOUNDRY MIXER SYSTEM WITH GAS ASSISTED RESIN INJECTION

David L. Phillips, Fridley; Sherman U. Moxness, Golden Valley, and Robert D. Emery, Minneapolis, all of Minn., assignors to Bepex Corporation, Santa Rosa, Calif.

Continuation-in-part of Ser. No. 337,564, Mar. 2, 1973, abandoned. This application Jan. 14, 1975, Ser. No. 540,877

Int. Cl.[2] B01F *7/04, 15/02*

U.S. Cl. 366—76 **10 Claims**



1. An apparatus for thoroughly and uniformly mixing foundry sand and catalyst-curable resinous binder therefor and quickly discharging with minimum residence time and comprising a multiple paddle mixer rotor enclosed within a housing, power means for continuously operating the rotor, material inlet means adjacent one end of the housing and mix discharge means at the other, and material storage containers for each of the materials to be mixed, said apparatus characterized by:

(A) said mixer housing comprising an elongated horizontal cylindrical tube closed at both ends;

(B) first positive feed means for introducing sand from the storage container therefor to a sand inlet at one end of the housing, and power means for operating said first feed means on demand;

(C) separate positive feed means for simultaneously introducing liquid binder components from the storage container therefor to said housing downstream from said sand inlet, said separate feed means comprising:

(1) power pump means for transporting said binder components in at least one flow line from the storage container therefor to said mixer housing,

(2) at least one injection nozzle disposed on said housing

downstream from said sand inlet and connected to said binder component flow line,

(3) valve means in said binder component flow line,

(4) a gas line in communication with said nozzle and adapted for connection to a source of gas under pressure, and

(5) means for actuating said valve on demand to direct flow of binder components to said nozzle and into the flow of gas to said nozzle;

(D) controls for actuation of said feed means mounted adjacent the discharge end of the mixer housing;

(E) said mixer rotor comprising a shaft journaled for rapid rotation on a central horizontal axis within said housing, with a plurality of variable pitch paddles disposed to extend radially from said shaft and rotate with their tips in close proximity to the housing wall to mininize accumulation of sand-resin mixture on the housing walls,

whereby said sand is dispersed and said binder is dispersed and injected therein and the sand and binder are quickly and uniformly mixed in the housing and quickly discharged therefrom with a residence time within the housing of from about 1 to 5 seconds.

4,126,399

METHOD AND APPARATUS FOR PREPARING MULTI-COMPONENT PLASTIC MATERIALS, PARTICULARLY POLYURETHANE, WITH SOLID MATERIAL ADDITIVES OR AT LEAST ONE HIGHLY VISCOUS COMPONENT

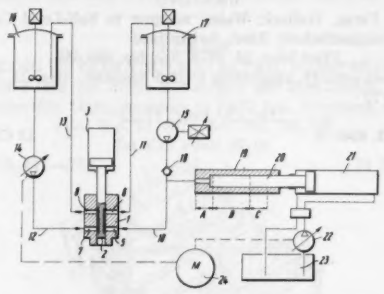
Fritz W. Schneider, Strasslach-Hailafing, and Ivica Grgic, Munich, both of Germany, assignors to Elastogran Maschinenbau GmbH & Co., Munich, Germany

Filed Jul. 11, 1977, Ser. No. 814,348

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1976, 2631588

Int. Cl.[2] B01F *15/00*

U.S. Cl. 366—159 **6 Claims**



1. A method of preparing multi-component plastic materials such as particularly polyurethane, in which at least one component includes admixed solid materials or is highly viscous whereby the components are metered separately by continuously operating pumps and the mixing step is effected in a mixing chamber, optionally after incorporating the solid materials, said method characterized in that the mixing chamber includes a control piston known per se, the control piston in a mixing position allowing the components to flow into the mixing chamber, and in its closing position allowing the components to flow along return grooves back to their respective reservoirs, and that at least for the solid material-containing or highly viscous component piston pump type transmitter means is connected between a continuously operating pump and an inlet of the mixing chamber, said transmitter means adapted to be actuated by a hydraulic piston cylinder assembly operatively connected to said continuously operating pump whereby a first portion (C) of a transmitter pumping stroke is performed while the control piston is in its return position, a second portion (B) of the transmitter pumping stroke is performed while the control piston is in the mixing position, and a third portion of the transmitter pumping stroke is performed while the control piston is again in its return position.

4,126,400

SERIAL PRINTING APPARATUS

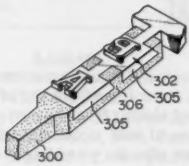
Takami Suzuki; Nobuo Iwata, and Masami Tsunasawa, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 644,987, Dec. 29, 1975, abandoned. This application Sep. 10, 1976, Ser. No. 722,243

Claims priority, application Japan, Sep. 12, 1975, 50-109978

Int. Cl.[2] B41J *1/30*

U.S. Cl. 400—144.2 **2 Claims**



1. In a rotary type wheel for use in a printing apparatus comprising a rotary hub rotatably about an axis, a plurality of resilient tongues extending radially outwardly from the hub, type members provided on the tongues, the type members being formed of a thermosetting resin and being plated with a metal selected from the group consisting of copper, nickel and chromium, the resilient tongues being formed of a thermoplastic resin containing fibers selected from the group consisting of glass and carbon, the type members having a type face and securing means integrally formed with the type face, the securing means having at least one section thereof of larger cross sectional area than the cross sectional area of another section, said sections being considered in imaginary cutting planes disposed generally parallel to the general plane of the type face, said larger section being located further from the type face than the smaller section, said resilient tongue being disposed about said securing means in abutting relationship therewith by injection molding the resilient tongues about said securing means, whereby the different cross sectional areas of said securing means serves to fixedly secure the type members to the resilient tongue, each of the tongues having two type members with a connector connecting the two type members and with the connector being integrally formed with the two type members, the resilient tongues being injection molded about the respective connecting member, the securing means of the type member being formed with a rectangular raised surface to ensure proper alignment of the type member during the molding, the securing means of the type members also comprising pins extending downwardly therefrom to ensure proper vertical alignment of the type members in a mold during the molding, the pins having a longitudinal axis disposed perpendicular to the general plane of the type face.

4,126,401

COMBINATION SUDSER AND RINSER BRUSH

Donald A. Stoyshin, 1043 Moy Ave., Windsor, Ontario, Canada

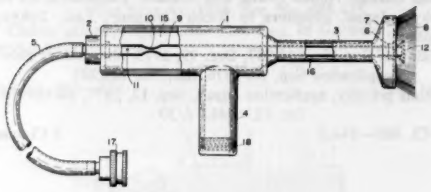
Filed Mar. 21, 1977, Ser. No. 779,829

Int. Cl.[2] A46B *11/04*

U.S. Cl. 401—42 **1 Claim**

1. A device for washing various items with a mixture of water and detergent, and rinsing said washed items with detergent free water, comprising a hollow tubular body with one end thereof closed and the other end extending into a hollow narrow neck, the space within said neck being a continuation of the space within said body; said neck terminating in a hol-

low backed circular brush, and the face of said brush being perforated; a hollow tubular handle extending at right angles from said body for containing detergent therein, the space within said handle being connected with the space within said body; a screw cap at the bottom of said handle for opening and closing it; a narrow centrally located water pipe running through the interior of said body and neck, extending at the rear end thereof, beyond said body for the attachment of a



water hose thereto, and extending beyond the said brush face, at the front end thereof; the front end of said pipe terminating into a perforated rinsing head located within, but separated from the bristles of said circular brush; a constricted area within said water pipe for providing a venturi effect therein; and a pinhole in said water pipe for feeding water into the space within said body and around the exterior of the water pipe, under reduced pressure.

4,126,402

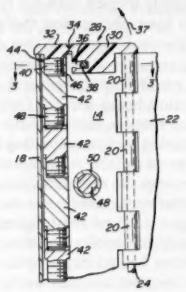
BINDER WITH MAGAZINE STORAGE

Richard E. Penniman, Gwynedd Valley, and John C. Hensel, Perkasie, both of Pa., assignors to Safeguard Products Corporation, North Wales, Pa.

Filed Oct. 4, 1977, Ser. No. 839,232

Int. Cl.[2] B42F *13/12*

U.S. Cl. 402—53 **7 Claims**



1. In a binder the improvement comprising a hollow elongated housing closed at its ends, one end of said housing being closed by a removable cap, a plurality of threaded posts connected end to end in said housing, one of said posts being connected to said cap whereby removal of the cap will facilitate removal of all of the posts therewith.

4,126,403

POST CONSTRUCTION

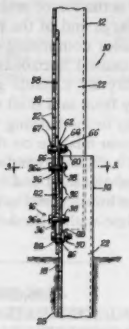
Lawrence J. Sweeney, Seneca, and Glenn E. MacDonald, Franklin, both of Pa., assignors to Franklin Steel Company, Franklin, Pa.

Continuation-in-part of Ser. No. 729,403, Oct. 4, 1976, abandoned. This application Jun. 22, 1977, Ser. No. 808,794

Int. Cl.[2] F16B *7/00*

U.S. Cl. 403—2 **16 Claims**

1. A post construction adapted to be disposed in generally upstanding relation, said post comprising upper and lower post sections, the lower end portion of said upper post section being in overlapped relation with the upper end portion of said lower post section, means connecting said post sections in said overlapped relation, said connecting means including at least one breakaway element comprising an elongate connecting element extending through each of said post sections in the overlapped zone and disposed substantially normal to the longitudinal axes of said post sections so as to retain said overlapped



portions in connected relation, said breakaway element being adapted to be broken to release said overlapped post portions when said upper post section is subjected to a predetermined impact force, and a longitudinally extending retainer bar connected to said upper and lower post sections independently of said breakaway element in a manner to prevent complete release of said post sections from each other when said upper post section is subjected to said predetermined impact force.

4,126,404

GRATING

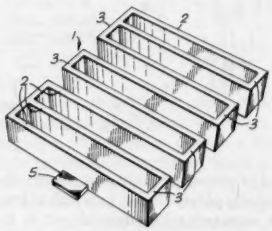
Derek Ferns, Trelleck, Wales, assignor to Self-Level Covers Aktiengesellschaft, Basel, Switzerland

Filed Mar. 15, 1978, Ser. No. 886,689

Claims priority, application United Kingdom, Mar. 23, 1977, 12232/77

Int. Cl.[2] E01C *11/22*

U.S. Cl. 404—4 **12 Claims**



1. A grating in combination with a support frame adapted to support the grating in a paved surface, the support frame having a hollow structure, whose cross-section generally matches that of the grating, and internal support means for supporting the grating so that its top surface is substantially level with the paved surface, the grating being constituted by a pair of end bars, a plurality of intermediate bars spaced between the end bars, a plurality of spacers and locking formations on the end bars, the spacers being positioned to provide a tortuous path for transmission of thrust perpendicular to the bars and the grating being made of a material such that the grating is resiliently compressible whereby the energy stored in the grating by such resilient compression forces, in use,

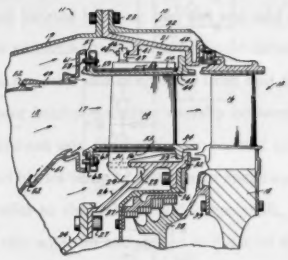
retains said locking formations in engagement with the support frame.

4,126,405

TURBINE NOZZLE

Melvin Bobo, Cincinnati; James W. Heyser, Fairfield; L. D. Shotts, Forest Park, and Raymond W. Wisbey, Sharonville, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 16, 1976, Ser. No. 751,318
Int. Cl.[2] F01D *5/14*
U.S. Cl. 415—115 **11 Claims**



1. An improved turbomachine nozzle segment of the type having at least one hollow vane interposed between outer and inner bands, wherein the improvement comprises:

(a) aperture means in one of the bands for providing fluid communication to the hollow cavity of the vane, said aperture means being coincident with an open end of said vane; and

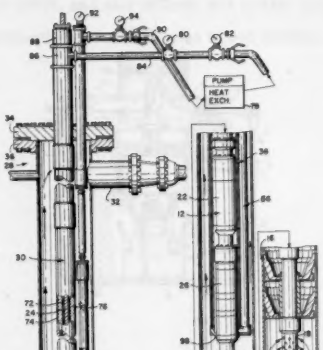
(b) circumferential stop means adjacent the other band for circumferential reaction against the frame structure of the turbomachine, said stop means being attached to the other end of said vane which projects through said other band.

4,126,406

COOLING OF DOWNHOLE ELECTRIC PUMP MOTORS

Francis T. Traylor; Frank J. Vatalaro, and Bert Benear, all of Bartlesville, Okla., assignors to TRW Inc., Cleveland, Ohio

Filed Sep. 13, 1976, Ser. No. 722,768
Int. Cl.[2] F04B *39/06*
U.S. Cl. 417—373 **11 Claims**



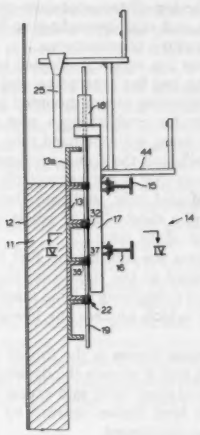
1. In combination with a submergible pump assembly having means for suspending the pump assembly downhole in a well and including an electric pump motor, a motor protector, and a pump at the bottom of the assembly, cooling apparatus for the motor and motor protector and comprising a tubular shroud surrounding the exterior surface of the motor and the motor protector at the downhole location of the pump assembly and providing interiorly of the shroud and exteriorly of the motor and the protector a chamber above said pump isolated from the exterior of the shroud, said chamber having an insulated side wall, a coolant discharge head at one end and a coolant exhaust port at the other end, and insulated conduit means extending downhole in the well to the shroud for circulating coolant through said chamber via said discharge head and said exhaust port, the coolant discharge head being located in a downhole location at the top of said shroud and having means for distributing coolant around the interior of the shroud, and said pump assembly being suspended from said coolant discharge head.

4,126,407

METHODS OF SHIFTING HEAVY AND/OR LOADED STRUCTURES

Nils H. Ahlgren, 22 Skyttevagen, S-133 00 Saltsjobaden, Sweden

Division of Ser. No. 594,516, Jul. 9, 1975, Pat. No. 4,050,225, which is a continuation-in-part of Ser. No. 478,592, Dec. 6, 1974, abandoned. This application Jul. 5, 1977, Ser. No. 815,988
Int. Cl.[2] F21D *11/10*
U.S. Cl. 425—63 **9 Claims**



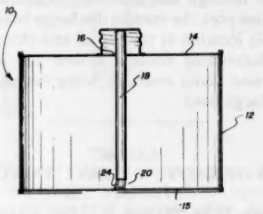
1. In combination, apparatus for shifting a heavy supporting structure relative to a load carrying structure which remains stationary relative to shifting movements of said heavy supporting structure, comprising: a heavy supporting structure and a load carrying structure, a plurality of parallel jack rods detachably secured to said load carrying structure so as to preclude relative motion of said jack rods with respect thereto; a plurality of climbing jack means adapted to operatively engage said plurality of jack rods so as to cause relative motion of said jack means with respect to said jack rods, said climbing jack means being secured to said heavy supporting structure; said heavy supporting structure supporting said load carrying structure in a manner such that said heavy supporting structure is slidable relative to said load carrying structure; so that said heavy supporting structure may be slidably shifted relative to said load carrying structure when said plurality of climbing jack means are simultaneously operated and advanced along said jack rods, and said load carrying structure remains stationary relative to said shifting movement of said heavy supporting structure; and so that the reactive forces in said jack rods which are caused by the operation of said climbing jack means

are transferred to said load carrying structure by said jack rods.

4,126,408
LIQUID FUELED LAMP

Wayne A. Cox, 6914 Orchid La., Dallas, Tex. 75230

Continuation-in-part of Ser. No. 613,250, Sep. 15, 1975, abandoned. This application May 11, 1977, Ser. No. 795,939
Int. Cl.[2] F23D *3/24*
U.S. Cl. 431—2 **16 Claims**



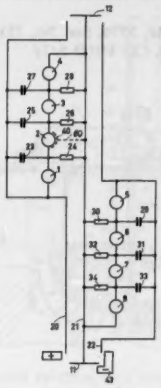
1. A liquid-fueled lamp, comprising:
(a) a sealable container for liquid fuel, said container having a top opening through which a fixed tube protrudes for a given distance, and including an upstanding lip sealingly fixed to the top of the container completely around the fixed tube, and said upstanding lip having means for engagement with a container cap;
(b) a container cap which is adapted to sealingly cover the top opening and the protruding end of the tube;
(c) flame-positioning means mounted in the protruding end of the tube for establishing a spot at which the lamp's flame is to burn, with the fixed tube having a diameter of about ¼ inch, and the flame-positioning means having an exposed area that is not appreciably larger than the end opening of said tube, and said flame-positioning means constituting a short plug of asbestos fibers positioned at the top end of the tube;
(d) wick means for transferring fuel from within the container upward to the flame-positioning means, with the wick means comprising a fabic made of double-knit polyester fiber which touches the lower end of the asbestos plug; and
(e) fuel-drainage means in the top of the container and located such that it permits the drainage of excess fuel back into the container, with said excess fuel constituting fuel which has been drawn upward by the wick means but which was not burned.

4,126,409
FLASH ARRAY PROVIDED WITH A HIGH VOLTAGE COMBUSTION FLASH LAMP

Johannes G. Bok, Eindhoven; Bauke J. Roelevink, Terneuzen, and Jan van Werkhoven, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 30, 1976, Ser. No. 701,223
Claims priority, application Netherlands, Jul. 2, 1975, 7507857
Int. Cl.[2] F21K *5/02*
U.S. Cl. 431—359 **3 Claims**

1. An assembly which comprises: a housing, a plurality of high voltage flash lamps carried on said housing, first and second electrical terminals on each flashlamp, a reflector having a plurality of concave surfaces, each said concave surface being disposed generally about one of said lamps, said reflector comprising at least a layer of an electrically conducting material, said reflector layer including a plurality of holes, said assembly further including a plurality of connecting electrical paths, each path connecting one terminal of one of said lamps to an associated source of electrical energy, said paths connecting said lamps for operation in a predetermined sequence, each of at least some of said electrical paths including a radiation-sensitive switching contact, each of said holes being disposed in alignment with one of said radiation-sensitive switching contacts disposed in said connecting electrical paths, at least some of said holes also being aligned with one of said lamps and the particular radiation-sensitive contact connected to the

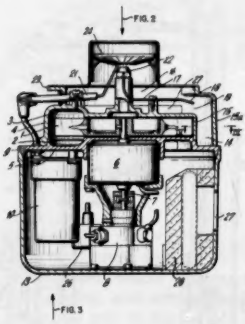


next lamp in said predetermined sequence, each switching contact cooperating with radiation transmitted by flashing of the antecedent lamp in said predetermined sequence, said reflector being connected to one of said electrical connectors through a low ohmic connection, each radiation-sensitive switching contact being a break contact and each break contact and said reflector being connected to said first terminal of the first lamp to be flashed in said predetermined sequence.

4,126,410
FUEL BURNER

Reinhard Gerwin, Stuttgart-Ost, Germany, assignor to J. Eberspacher, Esslingen am Neckar, Germany

Filed Mar. 9, 1977, Ser. No. 775,885
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1976, 2609987
Int. Cl.[2] F23Q *3/00*
U.S. Cl. 431—265 **15 Claims**



1. A fluent fuel burner including a housing, a motor having a drive shaft extending axially of the housing, said drive shaft having an axis, means for supplying combustion air to the burner including at least one fan disposed within the housing and having an outlet formed therein, the fan having a rotor comprised of a plurality of circularly spaced blades mounted on one end of the shaft, means for supplying fuel to the burner

including a discharge nozzle, a diffuser for mixing the fuel and air, and ignition means for lighting the fuel-air mixture, wherein the improvement comprises that said housing has a first housing compartment containing said motor and a second housing compartment containing said fan with said drive shaft extending from said first housing compartment into said second housing compartment, said second housing compartment comprising a fan housing cover extending transversely of said drive shaft and located between said fan and said motor and another cover extending transversely of said drive shaft and located on the opposite side of said fan from said fan housing cover, said rotor blades extending radially outwardly of said drive shaft between said fan housing cover and said another cover with said blades being of rectangular shape and disposed in planes parallel to the axis of said drive shaft, said rotor having a first side adjacent and spaced in the axial direction of said shaft from said fan housing cover and a second side adjacent and spaced in the axial direction of said shaft from said another cover, said first side of said rotor and said fan housing cover and said second side of said rotor and said another cover each forming an airflow channel extending along the radial sides of said rotor blades and arranged for joint discharge through the fan outlet, said another cover including a by-pass communicating with the outlet, and means to convey combustion air from said by-pass to said diffuser, the diffuser being disposed outside of said housing on the opposite side of said second housing compartment from said first housing compartment and in spaced relation from said another cover, the fuel discharge nozzle being interposed between the diffuser and said another cover, and said diffuser and nozzle being positioned in substantially coaxial relation to one another.

4,126,411

ROUND COOLER FOR HOT BULK MATERIAL

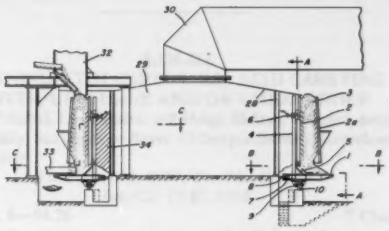
Klaus Moller, Friedrichsdorf; Dierk Michel, Niddatal; Hartmut Wolert, Frankfurt am Main, and Helmut Ernst, Offenbach, all of Fed. Rep. of Germany, assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Oct. 18, 1976, Ser. No. 733,091

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1976, 2613462

Int. Cl.² F27D *15/02*

U.S. Cl. 432—80 **14 Claims**



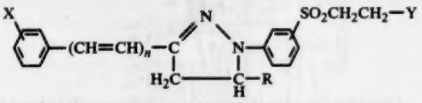
1. Rotary round cooler for the cooling of hot bulk material, especially hot iron ore sinter, consisting of an annular circular base plate, which is supported with contact rollers on a circular track for rotation in a horizontal plane, a support frame attached to the base plate, a movably fastened circular cooling chamber on the support frame with gas permeable inner and outer walls, and with at least the bottom edge of the outer wall located at some distance from the base plate, a loading device above the cooling chamber, a pick-off unloading device located above the base plate and in the midst of the cooled material, a drive device for the rotary motion of the cooler, a feed device located on the inside of the support frame for the gaseous cooling medium, as well as blowers for the production of the required pressure for the cooling medium, said combination wherein: the base plate is formed as a rigid disc (**1**), the walls (**2**, **2a**) of the cooling chamber (**3**) are supported on a support frame including a reinforced cylinder (**4**) reinforced in the radial direction by corner frames (**5**) on the disc (**1**) and reinforced in the upper part on the inside by a rotary transverse girder (**6**), and, for the horizontal rotation of the cooler, horizontal, flangeless contact rollers (**7**) are located on the inside of the disc (**1**), which run on a horizontal, circular, flangeless track (**8**) for rotation, and the vertical forces of the cooler are transferred to the track (**10**) by the flangeless contact rollers (**9**) located slightly below the center of gravity of the moving system.

4,126,412
METHOD FOR STABILIZING BRIGHTENED MODACRYLIC FIBERS

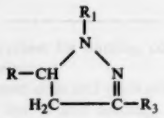
James C. Masson, Decatur, Ala., and George Palethorpe, Durham, N.C., assignors to Monsanto Company, Decatur, Ala.

Continuation-in-part of Ser. No. 645,106, Dec. 29, 1975, abandoned. This application Sep. 6, 1977, Ser. No. 830,738
Int. Cl.[2] D06P *1/38*
U.S. Cl. 8—1 W 5 Claims

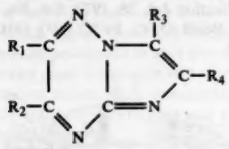
1. The method of preventing color-degrading interactions between certain optical brighteners and filaments made from a polymer made up of 35 to 85 weight percent acrylonitrile, 65 to 15 weight percent of a halogen-containing ethylenically unsaturated monomer and up to 50 weight percent of at least one other monomer copolymerizable with acrylonitrile, said optical brightener being selected from the group consisting of



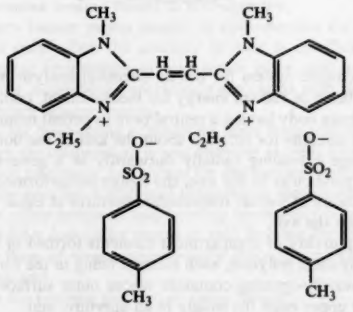
where X and Y are basic groups selected from the group consisting of $-NH_2$, $-N(CH_3)_2$, and $-N^+(CH_3)_3Z$, where Z is selected from the group consisting of chloride, sulphate or bromide anions, R is an alkyl group containing 1 to 4 carbon atoms and *n* is 0 to 3,



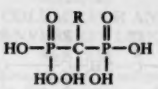
where R_1 is a phenyl radical, R_2 is hydrogen or an alkyl radical having 1 to 6 carbon atoms, a phenyl radical or a napthyl radical and R_3 is a phenyl or napthyl radical,



where R_1, R_2, R_3 and R_4 are hydrogen, an alkyl radical having 1 to 6 carbon atoms or a substituted or unsubstituted phenyl or napthyl radical, and



comprising contacting the filaments with a bath containing 0.01 to 0.5 weight percent of an organophosphorous compound having the formula



wherein R is a member selected from the group consisting of an alkyl radical having 1 to 11 carbon atoms, a phenyl radical and an alkyl radical containing no more than eight carbon atoms.

4,126,413
TANNING WITH CARBOXYLIC ACID CARRYING ESTER, URETHANE AND/OR AMIDE GROUP

Harro Träubel, Leverkusen, and Helga Heinze, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 31, 1977, Ser. No. 802,101
Int. Cl.[2] C14C *3/06*
U.S. Cl. 8—94.26 7 Claims

1. In the tanning or re-tanning of a hide with a tanning composition comprising a tanning-active substance and a Cr(III) salt, the improvement which comprises employing as said tanning-active substance a polycarboxylic acid compound which has been reacted to give a partial ester, urethane or amide.

4,126,414
COPOLYAMIDE AND ITS USE FOR FINISHING LEATHER AND LEATHER SUBSTITUTES

Karl Fischer, Bad Durkheim; Peter Horn, Hirschberg; Guenter Eckert, Limburgerhof, and Franz Leppmeier, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed May 13, 1977, Ser. No. 796,547
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2626931
Int. Cl.[2] C14C *11/00*
U.S. Cl. 8—94.21 3 Claims

1. In a process for finishing leather or leather substituents by applying a solution of a copolyamide in a mixture of conventional organic solvents and drying, the improvement which comprises applying a copolyamide having a K value of from 35 to 70 and the following composition:

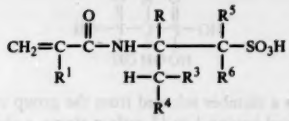
(a) from 10 to 32% by weight of adipic acid/hexamethylene diamine
(b) from 30 to 45% by weight of caprolactam and
(c) from 28 to 45% by weight of adipic acid/bis-(4-aminocyclohexyl)-2,2-propane.

4,126,415
ANTISTATIC CARPET

Marsha H. Coiner, Chesterfield; John C. Haylock, Midlothian; Julian H. Newland, Richmond, and Judd L. Schwartz, Chester, all of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Oct. 12, 1977, Ser. No. 841,256
Int. Cl.[2] D06M *3/16, 3/26, 5/10*; C08G *73/04*
U.S. Cl. 8—115.5 20 Claims

1. An antistatic pile carpet having a relatively pliable primary backing and a tufted surface, said surface being comprised of fibers selected from the group consisting of polyester and polyamide fibers having grafted thereon from 1 to 5 percent by weight of a conductive polymeric salt formed by reacting a polyethylenimine having a molecular weight of 200 to 10,000 and a sulfonic acid compound of the formula



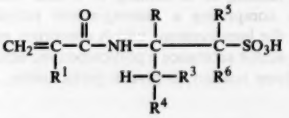
where R^1, R^2, R^3, R^4, R^5 and R^6 are individually hydrogen or a lower alkyl radical having 1 to 3 carbon atoms.

11. In a process for producing a pile carpet having a relatively pliable primary backing through which polyamide or polyester fibers are tufted, the improvement which comprises:

(a) subjecting said carpet to a spark discharge for 1 to 100 minutes in a zone of free radical initiating gas to generate free radical sites on the fibers of said carpet;

(b) subsequently exposing said carpet to oxygen or air;

(c) then exposing said carpet to an aqueous solution of a conductive polymeric salt formed by reacting a polyethylenimine having a molecular weight of 200 to 10,000 with an equivalent amount of a sulfonic acid compound of the formula



where R^1, R^2, R^3, R^4, R^5 and R^6 are individually hydrogen or a lower alkyl radical having 1 to 3 carbon atoms; and

(d) then heating said carpet to a temperature of 50° C. to 150° C. to form a graft copolymer of said conductive polymeric salt and said carpet fibers.

4,126,416

METHOD FOR DETERMINING THE LEVEL OF LDL CHOLESTEROL IN BLOOD PLASMA

Barry D. Sears, Marblehead, Mass., assignor to The Trustees of Boston University, Boston, Mass.

Filed Nov. 21, 1977, Ser. No. 853,598
Int. Cl.[2] G01N *33/16*
U.S. Cl. 23—230 B **9 Claims**

1. In an assay for determining the LDL cholesterol level in a sample of blood plasma:

the improvement comprising isolating LDL from other lipoproteins in said sample of blood plasma by selectively agglutinating LDL with a plant lectin which is a specific agglutinating agent for LDL and thereafter determining the amount of cholesterol in said agglutinated LDL.

4,126,417

MEANS FOR TESTING AND TREATMENT OF SOIL IN WHICH A PLANT IS GROWING

Paul R. Edwards, 4407 Tortilla Cir., Oceanside, Calif. 92054

Filed Mar. 11, 1975, Ser. No. 557,392
Int. Cl.[2] G01N *21/06, 21/08*
U.S. Cl. 422—56 **10 Claims**

1. A soil testing and treatment kit useable relative to soil in which a plant is growing, comprising:

(a) a piece of material forming a pH soil tester having two juxtaposed areas differently treated, a first of said two areas having a chemical treatment so as to change to various colors responsive to pH level of any liquid to which said first area is exposed, the second of said two areas being treated by coloring several sections of said second area different colors corresponding to said various colors to which said first area would turn depending on said pH level,

(b) separately packaged quantities of acid-increasing material, and

(c) numerical indicia on said piece of material indicating relative to each differently colored section of said second area the number of said quantities of said acid-increasing material that would be required to add to a given quantity

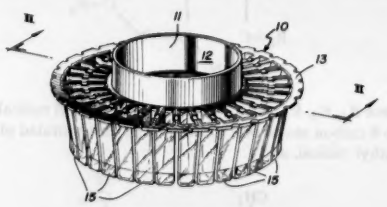
of liquid to provide the proper acidic strength to treat said soil to produce the desirable soil pH if said soil initially had a pH level related to the change of color of said first area of said piece of material.

4,126,418

CUVETTE

Leonard L. Krasnow, Westboro, Mass., assignor to Elkay Products, Inc., Shrewsbury, Mass.

Continuation of Ser. No. 676,068, Apr. 12, 1976, abandoned.
This application Jul. 28, 1977, Ser. No. 819,970
Int. Cl.[2] B65B *43/42;* B67C *3/00;* G01N *1/00*
U.S. Cl. 422—64 **14 Claims**



1. A cuvette system for use on chemical analysis machine, using a beam of radiant energy for measurement, comprising:

(a) a main body having a central bore to permit mounting on the machine for rotation about the axis of the bore and a flange extending radially outwardly in a general plane perpendicular to the axis, the flange being formed with a plurality of similar trapezoidal apertures at equal spacing about the axis,

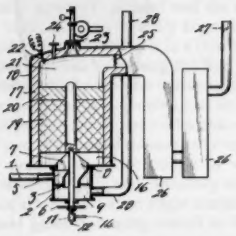
(b) a plurality of compartment elements formed of an optically-clear polymer, each element being in the form of an upwardly-opening container whose outer surface around the upper edge fits snugly in an aperture, and

(c) means consisting of a pair of buttons located on opposite portions of each aperture is provided to lock the compartment element in the aperture to resist dislodgement therefrom.

4,126,419
COMBUSTION DEVICE FOR BURNING WASTE GASES CONTAINING COMBUSTIBLE AND NOXIOUS MATTERS

Keichi Katabuchi, No. 13-13, 4-chome, Heiwadai, Nerima-ku, Tokyo; Fujio Kawana, c/o Someya-SO No. 3-13, 3-chome, Tokiwadaira, Matsudo-shi, Chiba, and Hajime Arai, No. 446, Yatsugasaki, Matsudo-shi, Chiba, all of Japan

Continuation of Ser. No. 719,447, Sep. 1, 1976, which is a continuation of Ser. No. 562,115, Mar. 26, 1975, abandoned. This application Nov. 30, 1977, Ser. No. 856,166
Claims priority, application Japan, Apr. 2, 1974, 49/37114
Int. Cl.[2] F23G 7/06
U.S. Cl. 422—109 8 Claims



1. A combustion system for burning combustible and noxious waste gases comprising:

a housing having two ends and a longitudinal axis;

inlet means at one end of said housing;

outlet means at the same end of said housing as said inlet means

partition means in said housing for longitudinally dividing said housing into a plurality of compartments;

a temperature adjusting chamber at the opposite end of said housing from said inlet and outlet means;

a plurality of fixed, highly thermally conductive metal regenerative means positioned in said plurality of compartments, the waste gases burning in said regenerative means, said regenerative means each comprising a plurality of longitudinally with respect to said axis extending corrugated stainless steel plates,

said corrugations being arranged with the corrugations of adjacent plates intersecting at right angles with each other defining meandering passages for the flow of waste gases therebetween, said corrugations extending at an angle greater than zero with respect to said axis;

temperature sensing means in said chamber;

auxiliary burner means located in said chamber for adding heat only when the quantity of heat is insufficient for efficient combustion of said waste gases, said auxiliary burner means being operatively associated with said temperature sensing means;

means for discharging combusting gases from said chamber when the temperature in said chamber exceeds a predetermined maximum, said means for discharging being operatively associated with said temperature sensing means;

rotary valve means in said housing operatively connecting said inlet and outlet means to said housing for directing the flow of waste gases serially through said compartment; and

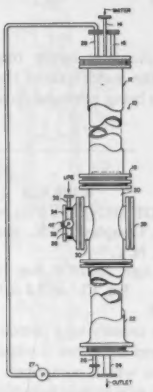
means for rotating said rotary valve means;

the flow entering at least one compartment, passing through said chamber and exiting through at least one other compartment, said rotary valve means rotating and sequentially valving the flow through said compartments.

4,126,420
HYDROLYSIS COLUMN FOR AN AMMONIUM DIURANATE CONVERSION LINE PROCESSING SYSTEM

Robert R. Fuller, Columbia, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 29, 1976, Ser. No. 701,069
Int. Cl.[2] B01J 10/00, 1/20; B05B 1/24; C01G 43/00
U.S. Cl. 422—162 3 Claims



1. A hydrolysis column used in an ammonium diuranate conversion line process comprising:

a column including a pipe having an inlet adapted for connection at one end to a source of water supply and having a discharge outlet at its other end;

a cross-connection inserted in said pipe between said inlet and outlet;

a gas nozzle comprising a housing connected to said cross-connection, said housing having a radially disposed passageway adapted for connection to a gas source and communicating with an axial passageway therein;

a Teflon fitting removably connected to the discharge side of said axial passageway, said fitting having an axial duct therein positioned in alignment with said axial passageway, and being of a length sufficient to extend into said column so that gas flowing through said passageways and duct may be discharged directly into and blend with water flowing in said column;

heating means in said nozzle housing, said nozzle housing being constructed and arranged to act as a heat sink so that heat imparted thereto by said heating means is substantially uniformly conducted thoughout the mass of said nozzle; and

said heating means being sufficient to maintain the temperature of said housing at a level which precludes freezing of gas flowing therethrough.

4,126,421
CATALYTIC CONVERTER VESSEL

Nobutaka Morikawa, Aichi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 9, 1977, Ser. No. 775,938
Claims priority, application Japan, Nov. 29, 1976, 51/159616[U]
Int. Cl.[2] F01N 3/15; B01J 8/02
U.S. Cl. 422—177 7 Claims

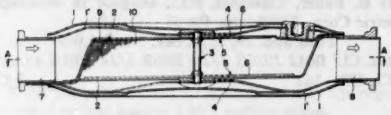
1. A catalyic converter vessel comprising an outer casing,

an inner casing within the outer casing, said inner casing comprising a first wall and a second different wall closely adjacent to and extending along said first wall,

one of said walls having a plurality of louver openings

formed therein, each such louver opening having a major axis greater than its minor axis,

the other of said walls having a plurality of punched holes



therein of a diameter larger than the minor axis, and smaller than the major axis of the louver openings, said punched holes being centered on and adjacent said louver openings.

4,126,422

METHOD OF DENSIFYING METAL OXIDES

Lewis H. Brandes, Campbell, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 26, 1976, Ser. No. 680,452
Int. Cl.² B01J *8/00*
U.S. Cl. 23—293 R **6 Claims**

1. A method for densifying a fumed metal oxide of Groups III and IV prepared by either a vapor phase oxidation or a combustion process which comprises:

(a) mechanically mixing said fumed metal oxide with a polar liquid in a high shear mixer, said fumed metal oxide being present in an amount to yield a total solids content in the mixture of between about 35–50% with the said polar liquid being the remainder, and said mixing being carried out at a mixer speed and for a time sufficient to form a granulated material mixture, being insufficient to form a liquid suspension or gel; and then

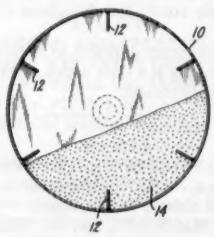
(b) drying said granulated material mixture to obtain dried material, said dried material substantially all passing through a 10 mesh screen.

4,126,423

METHOD OF INCREASING THE BULK DENSITY OF SILICA DUST

Ole A. Kongsgaarden, Vagsbygd, Norway, assignor to Elkem-Spigerverket A/S, Olso, Norway

Filed Apr. 27, 1977, Ser. No. 791,603
Claims priority, application Norway, Apr. 27, 1976, 761434
Int. Cl.² B01J *2/12*; C01B *33/12*
U.S. Cl. 23—293 R **7 Claims**



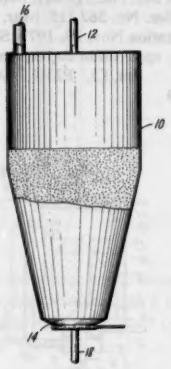
1. A reversible waterless process for increasing the bulk density of that colloidal silica dust recovered from metallurgical smelting processes producing materials high in silicon content comprising charging the silica dust to a drum having means to produce tumbling and treating the silica dust in the enclosed drum by rotating the drum at less than the critical speed for a period of at least about 5 hours.

4,126,424

METHOD OF COMPACTING SILICA DUST

Ole A. Kongsgaarden, Vagsbygd, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway

Filed Apr. 27, 1977, Ser. No. 791,604
Claims priority, application Norway, Apr. 27, 1976, 761435
Int. Cl.² B01J *2/16*; C01B *33/12*
U.S. Cl. 23—293 R **3 Claims**



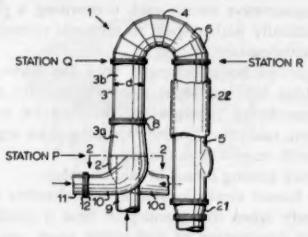
1. A reversible waterless process for increasing the bulk density of that colloidal silica dust recovered from metallurgical smelting processes producing materials high in silicon content which comprises charging the recovered colloidal silica dust to an enclosed space and injecting pressurized air from below into the colloidal silica dust at a flow rate that causes fluidization for a period of at least about five hours in a batch process.

4,126,425

GAS MIXER FOR SUBLIMATION PURPOSES

Christopher F. M. Twigge-Molecey, Toronto, Canada, assignor to Hatch Associates Ltd., Toronto, Canada

Filed Jun. 15, 1977, Ser. No. 801,542
Int. Cl.² B01D *7/02*
U.S. Cl. 23—294 R **8 Claims**



1. A gas mixer wherein a first gas is mixed with a second gas to obtain a solid by sublimation or by chemical reaction of the first and second gases comprising a mixing chamber being a duct having an inlet end and an outlet end and a substantially circular cross-section, said duct having a straight inlet section, a substantially 180° bend middle section and a straight exhaust section, said sections being respectively so connected to each other that the mixing chamber has an inverted U-shape such that the inlet section is substantially vertically upwardly aligned and the exhaust section is substantially vertically downwardly aligned, so that the combined flow of gas and solid therein is in a downward direction, a gas delivery nozzle assembly connected to the inlet end of the mixing chamber and comprising a nozzle means axially aligned with the mixing

chamber and adapted to deliver the first gas in an axial stream into the mixing chamber, said nozzle means having a substantially circular cross-section and a cross-sectional area substantially smaller than that of the inlet end of the mixing chamber, and at least two gas inlet ducts substantially equiangularly spaced around the periphery of the nozzle means and adapted to deliver the second gas in spiralling gas streams into the mixing chamber tangentially to the axial stream and at an angle thereto and in the direction thereof.

5. A method of generating a solid by sublimation or by chemical reaction comprising mixing a first gas and a second gas in a mixing chamber of substantially circular cross-section and being a duct having an inlet end and an outlet end, said duct having a straight inlet section, a substantially 180° bend middle section and a straight exhaust section, said sections being respectively so connected to each other that the mixing chamber has an inverted U-shape such that the inlet section is substantially vertically upwardly aligned and the exhaust section is substantially vertically downwardly aligned, so that the combined flow of gas and solid therein is in a downward direction, said mixing being effected by passing the first gas through a nozzle means of substantially circular cross-section and into the inlet end of the chamber in a centrally located and axial stream, directing the second gas into the inlet end of the chamber through at least two inlet means substantially equiangularly spaced around the periphery of the nozzle in at least two separate spiralling streams, each said spiralling stream being tangential to the axial stream and at an angle thereto and in the direction thereof; said gases becoming mixed in the chamber whereby the solid is generated; directing said generated solid carried by the combined flow of the gases to the outlet end of the chamber, and collecting said generated solid.

4,126,426

AGGLOMERATING COAL SLURRY PARTICLES

Eke Verschuur, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 12, 1977, Ser. No. 860,014

Claims priority, application United Kingdom, Jun. 14, 1977, 24836/77

Int. Cl.² C10L *5/14, 5/00*

U.S. Cl. 44—24 **7 Claims**

1. A process for preparing a solid load of coal from an aqueous slurry of coal particles which comprises dividing the slurry into a first fraction containing relatively small particles and a second fraction containing relatively large particles, agglomerating the particles in the first fraction under turbulent conditions with an amount of less than 10 weight percent, based on the weight of the small particles, of a binder and separating the thus-obtained agglomerates from a water phase and mixing the agglomerates with the second fraction.

5. A process as claimed in claim 1 in which a binder based on liquid hydrocarbons is used.

4,126,427

COAL GASIFICATION PLANT

David F. Eales, Kinneswood, Scotland, assignor to British Gas Corporation, London, England

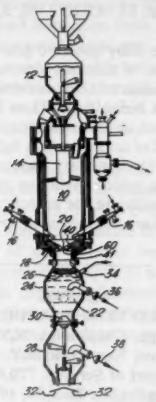
Filed Mar. 7, 1977, Ser. No. 774,942

Claims priority, application United Kingdom, May 28, 1976, 22297/76

Int. Cl.² B01J *3/00*

U.S. Cl. 48—62 R **3 Claims**

1. A slagging gasifier of the kind in which coal or other carbonaceous fuel is introduced into the top of a column-like gasifying vessel and is gasified under high pressure and temperature by means of oxygen and steam introduced near the fuel bed through tuyeres, a residual ash collecting as a molten slag and iron in the hearth of the gasifier vessel from which it is periodically discharged downwardly through a slag tap orifice in the hearth into water contained in a quenching chamber, the molten slag and iron being maintained molten in the hearth by directing hot combustion products from a main burner up the slag tap orifice, said main burner comprising an annular ring positioned beneath and surrounding said slag tap orifice, the improvement wherein there is provided a main burner ignition system located at a position in said quench chamber remote from said main burner and comprising a neat gas nozzle burner, a gas supply tube passing through a wall of said quench chamber and connected to said nozzle burner, and an ignitor positioned adjacent the nozzle of said neat gas nozzle burner, said gas nozzle burner being located below said main burner and out of the way of slag which passes through said slag tap orifice, the arrangement being such that in use, neat gas is fed to the nozzle burner such that, upon ignition, a long flame issues from the nozzle burner which is directed towards the main burner for igniting or re-igniting thereof.



4,126,428

COATED ABRASIVE CONTAINING ISOCYANURATE BINDER AND METHOD OF PRODUCING SAME

Harold E. Rude, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 648,899, Jan. 14, 1976, abandoned. This application Aug. 1, 1977, Ser. No. 820,827

Int. Cl.² C09K *3/14*

U.S. Cl. 51—295 **11 Claims**

1. In a coated abrasive product including abrasive granules which are supported on and adherently bonded to at least one major surface of a backing sheet by a make coating of a first resinous binder material and a size coating of a second resinous binder material, the improvement comprising at least one of the said resinous materials being polyisocyanurate resin, said isocyanurate resin being produced by trimerization of aromatic polyisocyanate and characterized by having dispersed throughout a plurality of minute capsules which are characterized by having permeable shell walls comprised of partially polymerized isocyanate and which may contain residual liquid catalyst for trimerization of said polyisocyanate, said permeable capsule shell wall being impermeable to said liquid catalyst at room temperature but permeable to said catalyst at temperatures above 50° C.

4,126,429
CO-FUSED ALUMINA-ZIRCONIA ALLOY ABRASIVE CONTAINING MAGNESIUM OXIDE

George R. Watson, Niagara Falls, Canada, assignor to Norton Company, Worcester, Mass.

Continuation of Ser. No. 640,351, Dec. 15, 1975, abandoned, which is a continuation of Ser. No. 487,717, Aug. 11, 1974, abandoned. This application Jul. 6, 1977, Ser. No. 813,318
Int. Cl.[2] C09C *1/68, 3/04*
U.S. Cl. 51—309 R 2 Claims

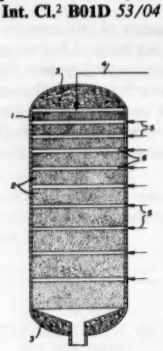
1. Multicrystalline alloy abrasive grit sized particles solidified from a co-fusion of alumina, zirconia, and magnesia, the weight ratio of magnesia to alumina being from 0.014 to 0.029, the zirconia content being from 22 to 28% by weight, said zirconia being present in alumina-zirconia and spinel-zirconia eutectic colonies, all of said magnesia being present in association with alumina or in boundary phases in the grits,

the product being microcrystalline such that the average zirconia rod spacing in the eutectic mixture measured at the eutectic colony centers is no greater than 4000 Angstroms.

4,126,430
PACKED BED TEMPERATURE CONTROL

Raymond P. Roberge, Chappaqua, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 770,676, Feb. 24, 1977, abandoned. This application Dec. 19, 1977, Ser. No. 862,128
Int. Cl.[2] B01D *53/04*
U.S. Cl. 55—20 5 Claims



1. A process for changing the temperature of a system from temperature T1 to temperature T2, said system comprising at least two packed bed zones operated in series, each packed bed zone containing

(i) a packed bed comprised of solid particles, each particle having a high heat transfer coefficient and a high surface area; and

(ii) a mixing zone situated adjacent to the packed bed and associated therewith wherein fluids can be mixed and distributed evenly across a surface of the packed bed comprising the following steps:

(a) introducing fluid F at temperature T2 and at a flowrate FR1 into the mixing zone of the first packed bed zone, said flow rate being sufficient to drive fluid F through the packed bed, which packed bed has a mass M1 and is initially at a temperature T1,

whereby:

(i) fluid F is driven through the packed bed;

(ii) the temperature of the packed bed is changed from temperature T1 to temperature T2;

and

(iii) the temperature of fluid F is changed from temperature T2 to temperature T1;

(b) permitting fluid F to exit the first packed bed zone at temperature T1;

(c) introducing fluid F at temperature T1 from step (b) into the mixing zone of the packed bed zone immediately succeeding the preceding packed bed zone in the series and, about simultaneously therewith, introducing additional fluid F at temperature T3 and flow rate FR2 into said mixing zone whereby the fluids are mixed to provide fluid F having a temperature T2 and a flow rate FR3, said flow rate FR3 being sufficient to drive fluid F through the packed bed, which packed bed has a mass M2 and is initially at a temperature T1, whereby:

(i) fluid F is driven through the packed bed;

(ii) the temperature of the packed bed is changed from temperature T1 to temperature T2;

and

(iii) the temperature of fluid F is changed from temperature T2 to temperature T1; and

(f) permitting fluid F to exit the packed bed zone referred to in step (c)

wherein:

F is a gas or a mixture of gases, or a liquid or a mixture of liquids;

T1 is the initial absolute temperature of each packed bed;

T2 is the desired final absolute temperature of each packed bed;

T3 is the absolute temperature of additional fluid F;

FR1 is the flow rate of fluid F as introduced into the mixing zone of the first packed bed zone to be determined as follows:

$$FR1 = \frac{M1 \cdot \left[\int_{T1}^{T2} CPS\, dT + \Delta H \right]}{t\,[CP2 \cdot T2 - CP1 \cdot T1]};$$

FR2 is the flow rate of the additional fluid F as introduced into the mixing zone of the packed bed zone referred to in step (c) to be determined as follows:

$$FR2 = A(1 + A)^{j-2} \cdot FR1;$$

FR3 is the flow rate of fluid F after fluid F and additional fluid F are mixed in the mixing zone of the packed bed zone referred to in step (c) to be determined as follows:

$$FR3 = (1 + A)^{j-1} \cdot FR1$$

M1 is the mass of particles in the packed bed of the first packed bed zone to be determined as follows:

$$M1 = \frac{M}{\sum_{j=1}^{N} (1 + A)^{j-1}};$$

M2 is the mass of particles in the packed bed of the packed bed zone referred to in step (c) to be determined as follows:

$$M2 = (1 + A)^{j-1} \cdot M1$$

A is the relationship between heat capacity and temperature to be determined as follows:

$$A = \frac{CP1 \cdot T1 - CP2 \cdot T2}{CP2 \cdot T2 - CP3 \cdot T3};$$

CP1 is the mean heat capacity of fluid F for the temperature range 0 to T1;

CP2 is the mean heat capacity of fluid F for the temperature range 0 to T2;

CP3 is the mean heat capacity of fluid F for the temperature range 0 to T3;

CPS is the heat capacity of the particles in the packed bed;

dT indicates that temperature T is the variable of integration;

t is the time desired for the change of temperature T1 to T2 in each packed bed;

j is an integer which represents the number in the series of the packed bed zone for which the computation is being made, said number to be determined by counting consecutively from, and including, the first packed bed zone;

M is the total mass of particles in all of the packed beds in the system;

N is the total number of packed bed zones in the system; and

ΔH is the heat of reaction or sorption.

4,126,431
METHOD FOR THE PRELIMINARY TREATMENT OF CRUDE GAS FROM A THERMIC CARBON REFINEMENT PROCESS

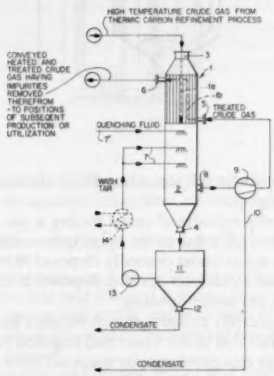
Eckard Wolowski, Mülheim, and Martin Hameier, Essen, both of Germany, assignors to Didier Engineering GmbH, Essen, Germany

Filed Nov. 29, 1976, Ser. No. 745,925

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1975, 2554742

Int. Cl.[2] B01D *5/00, 51/00, 53/00*

U.S. Cl. 55—23 **7 Claims**


HIGH TEMPERATURE CRUDE GAS FROM THERMIC CARBON REFINEMENT PROCESS
CONVEYED HEATED AND TREATED CRUDE GAS HAVING IMPURITIES REMOVED THEREFROM -TO POSITIONS OF SUBSEQENT PRODUCTION OR UTILIZATION
TREATED CRUDE GAS
QUENCHING FLUID
WASH TAR
CONDENSATE
CONDENSATE

1. In a process of conveying high temperature crude gas derived from a thermic carbon refinement process to positions of subsequent production or utilization, said high temperature crude gas containing condensable components including impurities having boiling points higher than 350° C., such impurities being capable, during conveyance of said high temperature crude gas, of condensation, thereby forming condensates which interfere with the conveyance of said high temperature crude gas, the improvement comprising removing from said high temperature crude gas only said impurities which have boiling points above 350° C. and which are capable of forming condensates during the conveyance of said high temperature crude gas, while avoiding the removal of the remainder of said condensable components and while substantially maintaining the high temperature of said high temperature crude gas during substantially the entire length of the conveyance thereof to said positions of subsequent production or utilization, said operation of removing comprising:

passing said high temperature crude gas containing therein said impurities, derived from said thermic carbon refinement process, at the exit temperature from said process, through a heat emitting portion of an indirect heat exchanger, and thereby preliminarily cooling said high temperature crude gas to form preliminarily cooled crude gas;

passing said preliminarily cooled crude gas from said heat exchanger through a scrubber and therein further cooling said preliminarily cooled crude gas by contact with a cooling liquid to a separation temperature of approximately 350° C., which is lower than said boiling points of said impurities, thereby forming further cooled crude gas and condensing said impurities from said further cooled crude gas to form treated crude gas;

collecting the thus condensed impurities and passing said collected impurities into and through said scrubber in the form of a flow of wash tar which is used as said cooling liquid to perform said step of further cooling said preliminarily cooled crude gas; and

passing said treated crude gas from said scrubber through a heat absorbing portion of said indirect heat exchanger, and thereby heating said treated crude gas, by heat exchange with said high temperature crude gas in said heat emitting portion of said indirect heat exchanger, to a temperature approximately equal to said exit temperature from said thermic carbon refinement process, whereby said treated crude gas may thereafter be conveyed to said positions of subsequent production or utilization without the formation of condensates.

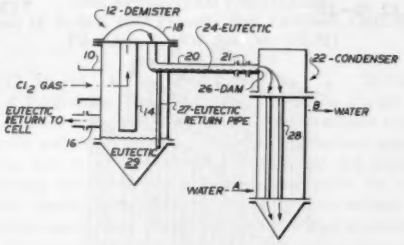
4,126,432
METHOD OF TREATING A GAS

Robert L. Hargis, Palestine, Tex., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 20, 1977, Ser. No. 817,336

Int. Cl.[2] B01D *53/00*

U.S. Cl. 55—71 **4 Claims**

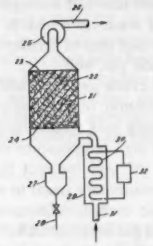


1. A method of treating a gas containing a liquid substance, including the steps of separating substantially all of said liquid substance from the gas, sending the gas from the separating step to a cooling step which employs a heat exchanger, then, in the cooling step, cooling the gas to a temperature below that at which said liquid substance exists as a solid, wherein the improvement comprises removing a remaining amount of the liquid substance, which remains in the gas following the step of separating and which collects in the step of sending, before said remaining amount reaches the step of cooling and accumulates as solidified liquid in the cooling step, where it would contribute to a clogging of the heat exchanger employed in the cooling step.

4,126,433
METHOD OF AND APPARATUS FOR REMOVING AEROSOLS OF HYDROCARBONS FROM A GAS STREAM

Knut S. E. Forssberg, Lagmansvägen 7, S-950 10 Gammelstad, and Karl D. Kopp, Cedervägen 25, S-18010 Enebyberg, both of Sweden

Filed Oct. 12, 1976, Ser. No. 731,343
Claims priority, application Sweden, Oct. 9, 1975, 7511363
Int. Cl.[2] B01D *53/04*
U.S. Cl. 55—74 **9 Claims**

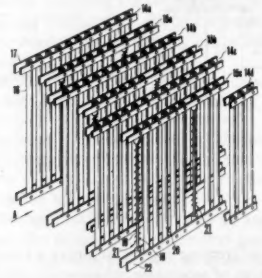


1. A method of recovering liquid aerosol particles of hydrocarbons or hydrocarbon derivatives from a gas in which they are suspended, comprising the steps of
providing a bed of crystalline material in form of grains having a size of about 0.5–2.0 mm;
coating said grains with a lipophilic substance to provide them with lipophilic surfaces; and
directing the gas with the therein suspended particles against the coated grains, and passing the gas through the bed of coated grains so as to recover the hydrocarbon or hydrocarbon derivatives from the gas by adsorption of said particles on said lipophilic surface.

4,126,434
ELECTROSTATIC DUST PRECIPITATORS

Hara Keiichi, 2-49, Higashi-Mizue, Edogawa-ku, Tokyo, Japan

Continuation of Ser. No. 647,007, Jan. 7, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,941
Claims priority, application [JP] Japan Sept. 13, 1975, 50-111184
Int. Cl.[2] B03C *3/00*
U.S. Cl. 55—137 **7 Claims**

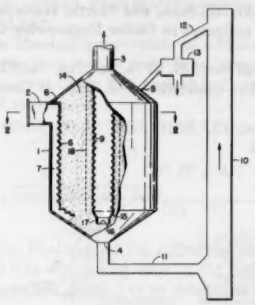


1. An electrostatic dust precipitator comprising:
a discharge electrode structure comprising:
a plurality of rod-shaped parallel electrodes of circular cross-section; and
a plurality of pins provided on a predetermined number of less than all of said rod-shaped electrodes and extending in a direction of the flow of a dust containing gas in said electrostatic dust precipitator wherein the rod shaped electrode with pins is upstream of the rod shaped electrode without pins;
a dust collection electrode structure, said dust collection electrode structure comprising a plurality of spaced apart rod-shaped parallel electrodes of circular cross-section;
means for supporting said discharge electrode structure and said dust collection electrode structure in spaced parallel opposing relationship; and
means for supplying DC voltages of opposite polarities upon said discharge electrode structure and said dust collection electrode structure whereby the dust containing gas initially flows between a rod shaped discharge electrode with pins and a rod shaped collecting electrode.

4,126,435
APPARATUS FOR REMOVING FINELY DIVIDED SOLIDS FROM GAS

Richard G. Reese, Woodside, Calif., assignor to Combustion Power Company, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 510,291, Sep. 30, 1974, Pat. No. 4,017,278. This application Sep. 13, 1976, Ser. No. 722,559
Int. Cl.[2] B01D *46/34*
U.S. Cl. 55—474 **4 Claims**



1. In an apparatus for separating finely divided solids from gas comprising:
(a) a generally cylindrical vessel having a gas inlet opening in its side wall, a gas outlet opening centrally disposed in its top, a solids outlet centrally disposed in its bottom and at least one solids inlet opening disposed in its top laterally from the gas outlet opening,
(b) a first generally cylindrical wall member having a diameter less than that of the vessel and disposed in the vessel to provide an elongated annular space between said first wall member and the wall of the vessel and in sealing engagement with the top portion of the vessel, and the annular space between the first wall member and the wall of the vessel being unobstructed and in open communication with the solids outlet at the bottom of the vessel,
(c) a second generally cylindrical wall member having a diameter less than said first wall member disposed in said first wall member to provide an elongated annular space between the two wall members, the space enclosed by said second wall member being in open communication with the gas outlet opening in the top of the vessel and with the solids outlet at the bottom of the vessel,
(d) a mass of particulate solid contact material filling the annular space between the two cylindrical wall members from the upper end of the second cylindrical wall member to the lower portion of the vessel, said mass being in open communication with the solids outlet opening, and
(e) the surfaces of both cylindrical wall members being louvered surfaces formed by perforating said walls to form louver vanes inclined to the vertical at an angle of about 15° to 80° and having louver openings sufficiently large that essentially all of the particles constituting the contact mass are capable of passing through the openings, the louver vanes of the first cylindrical wall member

extending outwardly and those of the second cylindrical wall member extending inwardly,

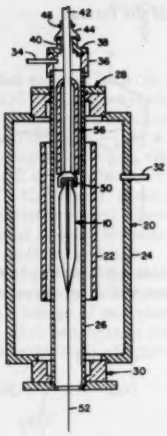
(f) the improvement wherein a short portion of the lower end of the first wall member is bent inwardly so that the bent portion is inclined to the vertical at an angle of about 20° to 70°.

4,126,436

APPARATUS FOR MINIMIZING DRAWN FILAMENT DIAMETER VARIATION

Alan C. Bailey, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,418
Int. Cl.[2] C03B *37/02*
U.S. Cl. 65—13 **6 Claims**



1. In an apparatus for drawing a cylindrically shaped blank of thermoplastic material into a filament comprising the combination of

an elongated, cylindrically shaped muffle having first and second ends,

means for supporting said blank in said muffle with such an orientation that said filament is drawn from said first end,

means for heating said muffle in the vicinity of said blank so that said blank is heated to the drawing temperature of the material thereof,

means for sealing said second end of said muffle, and

means for introducing a gas into said second end of said muffle, said gas flowing through said muffle and exhausting from said first end,

the improvement comprising means disposed in said muffle immediately adjacent said blank on that side thereof toward said second end of said muffle for confining the flow of said gas to a narrow, cylindrically shaped channel adjacent to the inner wall of said muffle to uniformly heat said gas prior to the time that said gas flows past said blank.

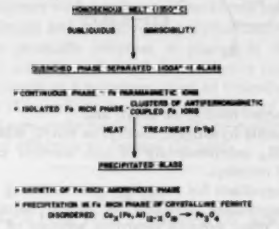
4,126,437

MAGNETIC GLASS CARRIER MATERIALS

Michael P. O'Horo, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 2, 1976, Ser. No. 746,961
Int. Cl.[2] C03B *19/10, 32/00;* C03C *3/22;* G03G *9/14*
U.S. Cl. 65—21 **7 Claims**

1. A process for preparing low density, magnetic, composite electrostatographic carrier particles comprising forming a mixture containing about 34 moles of SiO_2, about 25 moles of B_2O_3, about 21 moles of CaO, about 8 moles of Al_2O_3, and about 12 moles of Fe_2O_3, melting said mixture by heating to a temperature of up to about 1350° C., quenching the melted mixture, grinding the quenched mixture to a particle size of between about 100 mesh and about 200 mesh, and heating the ground mixture at a temperature in the range of between about 600° C. and about 800° C. for up to about 24 hours to form


HOMOGENOUS MELT (1350° C)
SUBLIQUIDUS
IMMISCIBILITY
QUENCHED PHASE SEPARATED 1000A° IN GLASS
• CONTINUOUS PHASE - Fe PARAMAGNETIC ION
• ISOLATED Fe RICH PHASE - CLUSTERS OF ANTIFERROMAGNETIC COUPLED Fe IONS
HEAT TREATMENT (>T_g)
PRECIPITATED GLASS
• GROWTH OF Fe RICH AMORPHOUS PHASE
• PRECIPITATION IN Fe RICH PHASE OF CRYSTALLINE FERRITE
DISORDERED

aluminoboro-silicate glass particles containing a precipitated phase of Fe_3O_4 superparamagnetic ferrite crystallites having an average particle size of up to about 500 A whereby said carrier particles have a resistivity on the order of about 10^6 to about 10^{12} ohm/cm. and display a lack of hysteresis behavior.

4,126,438

NOVEL GOLF TEE

Michael A. Pulli, 1279 Schwab Rd., Hatfield, Pa. 19440, and James E. Bruno, 8303 Strahle Pl., Philadelphia, Pa. 19111

Filed Sep. 15, 1976, Ser. No. 723,508
Int. Cl.[2] A01N *17/08*
U.S. Cl. 71—3 **4 Claims**

1. A golf tee which decomposes in the presence of moisture and to which a water soluble coating containing a water soluble fertilizer has been applied, consisting essentially of a homogeneously blended mixture of clay, grass seed, humus and a soil conditioner selected from the group consisting of a fertilizer, herbicide, fungicide, larvacide, insecticide and mixtures thereof.

4,126,439

ENCAPSULATED FERTILIZER

Marion H. Stekoll, 1092 Florence Way, Campbell, Calif. 95008

Filed Aug. 1, 1977, Ser. No. 820,921
Int. Cl.[2] C05F *1/00*
U.S. Cl. 71—16 **16 Claims**

1. A fertilizer product comprising a fertilizing amount of a fish emulsion composition encased in a water soluble capsule wherein said fish emulsion composition comprises approximately 74% to 82% by volume concentrated fish emulsion containing insufficient water content to dissolve the water soluble capsule, approximately 15% to 20% by volume of a liquifying agent and approximately 3% to 6% of a surfactant.

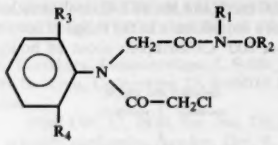
4,126,440

HYDROXAMIC ACID DERIVATIVES FOR REGULATING PLANT GROWTH

Hans Moser, Magden, and Rolf Schurter, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 28, 1977, Ser. No. 772,420
Claims priority, application Switzerland, Mar. 9, 1976, 2898/76; Jan. 7, 1977, 175/77
Int. Cl.[2] A01N *5/00, 9/20;* C07C *83/10*
U.S. Cl. 71—76 **17 Claims**

1. Hydroxamic acid derivatives of the formula I



(I)

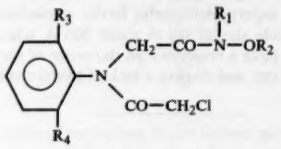
wherein

R_1 represents methyl or ethyl, and

R_2 represents hydrogen, methyl or ethyl, while

R_3 and R_4 independently of one another each represent methyl or ethyl.

8. A composition for retarding and inhibiting plant growth, which composition contains as active substance a non-phytotoxic, plant growth retarding amount of a hydroxamic acid derivative of the formula I according to claim 1



(I)

wherein

R_1 represents methyl or ethyl, and

R_2 represents hydrogen, methyl or ethyl, while

R_3 and R_4 independently of one another each represent methyl or ethyl,

together with a suitable carrier therefor.

4,126,441

METHOD OF ROOTING CUTTINGS

John W. Willard, Sr., Rapid City, S. Dak., assignor to Caw Industries, Inc., Rapid City, S. Dak.

Continuation-in-part of Ser. No. 593,712, Jul. 7, 1975, Pat. No. 4,084,938, which is a continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, Pat. No. 3,893,943, which is a continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Nov. 8, 1976, Ser. No. 740,040

The portion of the term of this patent subsequent to Jul. 8, 1992, has been disclaimed.

Int. Cl.[2] A01N *21/02*

U.S. Cl. 71—77 **22 Claims**

1. A method of rooting cuttings comprising intimately contacting the cuttings to be rooted with water containing an effective amount to root the said cuttings faster and easier than when using plain water of a rooting agent consisting essentially of a catalyst, the said catalyst being prepared by a process comprising

admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0:2.0,

the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,

reacting the alkali metal silicate with said dissolved substances providing calcium ion and magnesium ion to produce an aqueous suspension of finely divided particles of the reaction product,

admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said finely divided particles upon agitating the aqueous medium, and

agitating the aqueous medium containing the finely divided particles and surfactant to form said catalyst micelles.

4,126,442

O-PHOSPHOROAMIDOPHENYLMORPHOLINE COMPOUNDS AND USE AS HERBICIDES

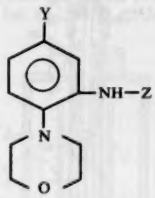
Kelvin K. Shen, Fountain Valley, and Thomas S. Griffin, Orange, both of Calif., assignors to United States Borax & Chemical Corp., Los Angeles, Calif.

Filed Mar. 23, 1978, Ser. No. 889,328

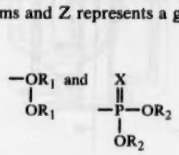
Int. Cl.[2] C07F *9/65*; A01N *9/36*

U.S. Cl. 71—86 **13 Claims**

1. A compound of the formula



in which Y represents a branched chain alkyl group of 3 to about 6 carbon atoms and Z represents a group selected from



in which R_1 is selected from lower alkyl, lower alkenyl, aralkyl, and aryl, R_2 is selected from hydrogen, lower alkyl, lower alkenyl, aralkyl and aryl, wherein said aralkyl and aryl are selected from benzyl, phenylethyl, phenyl and the chloro, bromo, loweralkoxy and loweralkyl ring substituted derivatives thereof, and X is O or S.

7. A herbicidal composition comprising a phytotoxic amount of a compound according to claim 1, a surfactant and an inert carrier therefor.

4,126,443

INHIBITION OF CRYSTAL FORMATION OF 1,2-DIMETHYL-3,5-DIPHENYLPYRAZOLIUM METHYL SULFATE IN AQUEOUS SOLUTIONS WITH AN ACRYLAMIDE POLYMER

Ramon A. Gadea, Lawrenceville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 21, 1977, Ser. No. 853,711

Int. Cl.[2] A01N *17/08, 9/22*; C07D *231/12*

U.S. Cl. 71—92 **7 Claims**

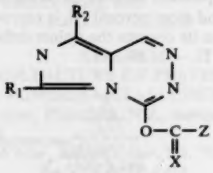
1. An aqueous composition comprising (a) an herbicidally effective amount from about 20% to about 40% by weight, of 1,2-dimethyl-3,5-diphenylpyrazolium methyl sulfate, (b) from about 9% to about 13%, by weight, of octyl phenoxy polyethoxy ethanol, (c) from about 20 ppm to about 640 ppm, by weight, of a hydrolyzed acrylamide polymer having an average molecular weight of 7000 to 9000 and from about 10% to about 20% unhydrolyzed amide groups, and (d) the balance being water, whereby said acrylamide polymer inhibits both the partial crystallization and precipitation of said pyrazolium salt from said liquid composition at temperatures ranging from +5° C. to −7.5° C.

4,126,444
SUBSTITUTED IMIDAZO (1,5-D)-AS-TRIAZIN-4-OLS, AND HERBICIDAL USE THEREOF

Barrington Cross, Rocky Hill, N.J., assignor to American Cynamid Company, Stamford, Conn.

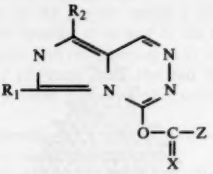
Filed Nov. 22, 1977, Ser. No. 853,977
Int. Cl.[2] C07D *285/20, 403/04;* A01N *9/22*
U.S. Cl. 71—93 14 Claims

1. A compound of the formula:



wherein R_1 is a member selected from the group consisting of alkyl C_2–C_6, cycloalkyl C_3–C_6, phenyl and mono-substituted phenyl, wherein said substituent is selected from alkyl C_1–C_4, alkoxy C_1–C_3, halo and $(CH_3)_2N$—; R_2 is a member selected from the group consisting of hydrogen, alkyl C_1–C_3 and halo; X is oxygen or sulfur; Z is a member selected from the group consisting of alkyl C_1–C_8, benzyl, mono-substituted benzyl, phenyl and mono-substituted phenyl wherein said substituents of said benzyl and phenyl moieties are selected from the group consisting of methyl, methoxy and halo.

7. A method for the pre- and postemergence control of undesired monocotyledonous and dicotyledonous plants comprising applying to the foliage of said plants or to the soil in which the seeds and other propagating organs of said plants germinate and grow a herbicidally effective amount of a compound of formula:



wherein R_1 is a member selected from the group consisting of alkyl C_2–C_6, cycloalkyl C_3–C_6, phenyl and mono-substituted phenyl wherein said substituent is selected from alkyl C_1–C_4, alkoxy C_1–C_3, halo and $(CH_3)_2N$—; R_2 is a member selected from the group consisting of hydrogen, alkyl C_1–C_3 and halo; X is oxygen or sulfur; Z is a member selected from the group consisting of alkyl C_1–C_8, benzyl mono-substituted benzyl, phenyl and mono-substituted phenyl wherein said substituents of said benzyl and phenyl moieties are selected from the group consisting of methyl, methoxy and halo.

4,126,445
SYNTHETIC POLYMERS FURNISHING CONTROLLED RELEASE OF A BIOLOGICALLY ACTIVE COMPONENT DURING DEGRADATION

G. Graham Allan and Sreeman A. N. Neogi, Seattle, Wash. 98105, assignors to University of Washington, Both of Seatle, Wash.

Division of Ser. No. 184,259, Sep. 27, 1971, Pat. No. 4,062,855. This application May 10, 1976, Ser. No. 684,561
Int. Cl.[2] A01N *9/22*
U.S. Cl. 71—94 5 Claims

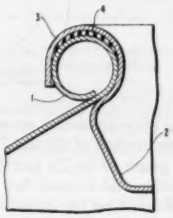
1. A method of controlling pests comprising:

applying to the medium where the pesticide control is desired a controlled release pesticide polymer for extended release of an effective amount of the active pesticide over an extended period of time, the pesticide polymer made up of at least one polymer-forming pesticide component having at least two reactive functional groups selected from the group consisting of —NH_2, —COOH and —OH, the polymer-forming pesticide component polymerized to form a polymer with a polymeric backbone having hydrophilic linkages and a degree of polymerization such that when the pesticide polymer is placed in the medium where its activity is desired the pesticide component is slowly released as a monomer over an extended period of time into the medium by random scission of the hydrophilic linkages in the backbone of the pesticide polymer in an amount effective to control the pest.

4,126,446
PACKAGES FOR THE STORAGE OF AIR AND MOISTURE SENSITIVE METALLURGICAL ADDITIVES AND THE USE OF SUCH PACKAGES

Helmut KNorre, Seligenstadt, and Peter Leidl, Grossauheim, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Continuation of Ser. No. 337,984, Mar. 5, 1973, abandoned. This application Apr. 22, 1976, Ser. No. 679,421
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1972, 2210665
Int. Cl.[2] C21C *7/00*
U.S. Cl. 75—53 3 Claims



1. In combination a metallic container comprised of two or more aluminum components that are secured together said container having an upper limit and a lower limit, either or both of said upper limit and said lower limit being open; a lid means for closing each of said openings; said container having contents selected from the group consisting of sodium, lithium, Na_2O, PCl_5 and P_2O_5; each of said lid members being clinched or crimped over a rolled edge of said container at each of said openings in said container in order to hermetically seal said container and thereby seal said contents against air moisture.

4,126,447
LANTHANUM-MODIFIED HIGH-TEMPERATURE ALLOY

Thomas M. Costello, and Jerome P. Bressanelli, both of, Pittsburgh, Pa., assignors to Crucible Inc., Pittsburgh, Pa.

Filed Oct. 31, 1977, Ser. No. 847,342
Int. Cl.[2] C22C *30/00*
U.S. Cl. 75—122 3 Claims

1. A stainless steel for use in high temperature applications characterized by good oxidation resistance and high temperature strength said stainless steel consisting essentially of, in weight percent, carbon 0.02 to 0.25, manganese 3 max., phosphorous 0.04 max., sulfur 0.03 max., silicon 2 max., chromium 19 to 22, nickel 30 to 45, molybdenum up to 1, tungsten 1 to 4, nitrogen 0.01 to 0.15, titanium 0.5 max., aluminum 0.5 max., lanthanum 0.02 to 0.25, boron 0.010 max., where the combination of elements satisfies the equation chromium equivalent equals

$$\%\ Cr + 1.75\ (\%\ W) + 4.25\ (\%\ Mo) + 1.5\ (\%\ Si) + 2.5\ (\%\ Ti) + 3.0\ (\%\ Al) - 0.52\ (\%\ Ni) = <9.0$$

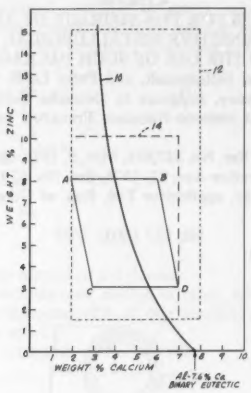
balance iron.

4,126,448

SUPERPLASTIC ALUMINUM ALLOY PRODUCTS AND METHOD OF PREPARATION

David M. Moore, Kingston, and Larry R. Morris, Yarker, both of Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Mar. 31, 1977, Ser. No. 783,301
Int. Cl.[2] C22C *21/10*
U.S. Cl. 75—146 **12 Claims**



10. An aluminum alloy consisting essentially of

(a) Ca and Zn, the content of Ca and Zn being such that on a rectangular graph of % Zn plotted against % Ca the point representing said content lies within the area of a quadrilateral defined by the coordinates 2.0% Ca, 8.0% Zn; 6.0% Ca, 8.0% Zn; 3.0% Ca, 3.0% Zn; and 7.0% Ca, 3.0% Zn,

(b) up to 1.0% each of Si and Mn, up to 0.2% each of Cu and Mg, up to 1.0% total (up to 0.5% max. each) of Fe, Ti, V, Cr, Zr, and Sr, up to 1.0% total (up to 0.25% each) of other elements;

(c) balance Al.

4,126,449

ZIRCONIUM-TITANIUM ALLOYS CONTAINING TRANSITION METAL ELEMENTS

Lee E. Tanner, Summit, and Ranjan Ray, Morristown, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 9, 1977, Ser. No. 823,056
Int. Cl.[2] C22C *9/00, 14/00, 16/00, 30/00*
U.S. Cl. 75—164 **7 Claims**

1. A primarily glassy zirconium-titanium alloy containing a transition metal element selected from the group consisting of iron, cobalt, nickel and copper, said alloy consisting essentially of a compositionselected from the group consisting of:

(a) zirconium, titanium and iron which, when plotted on a ternary composition diagram in atom percent Zr, atom percent Ti and atom percent Fe, is represented by a polygon having at its corners the points defined by

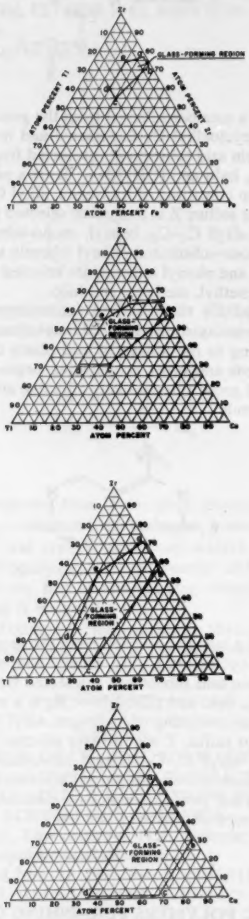
(1) 77 Zr — 1 Ti — 22 Fe
(2) 72 Zr — 1 Ti — 27 Fe
(3) 55 Zr — 25 Ti — 20 Fe
(4) 60 Zr — 25 Ti — 15 Fe
(5) 74 Zr — 11 Ti — 15 Fe;

(b) zirconium, titanium and cobalt which, when plotted on a ternary composition diagram in atom percent Zr, atom percent Ti and atom percent Co, is represented by a polygon having at its corners the points defined by

(1) 64 Zr — 1 Ti — 35 Co
(2) 56 Zr — 1 Ti — 43 Co
(3) 31 Zr — 40 Ti — 29 Co
(4) 31 Zr — 54 Ti — 15 Co
(5) 55 Zr — 30 Ti — 15 Co
(6) 63 Zr — 14 Ti — 23 Co;

(c) zirconium, titanium and nickel which, when plotted on a ternary composition diagram in atom percent Zr, atom percent Ti and atom percent Ni, is represented by a polygon having at its corners the points defined by

(1) 71 Zr — 1 Ti — 28 Ni



(2) 57 Zr — 1 Ti — 42 Ni
(3) 5 Zr — 60 Ti — 35 Ni
(4) 21 Zr — 60 Ti — 19 Ni
(5) 55 Zr — 30 Ti — 15 Ni; and

(d) zirconium, titanium and copper which, when plotted on a ternary composition diagram in atom percent Zr, atom percent Ti and atom percent Cu, is represented by a polygon having at its corners the points defined by

(1) 64 Zr — 1 Ti — 35 Cu
(2) 31 Zr — 1 Ti — 68 Cu
(3) 1 Zr — 32 Ti — 67 Cu
(4) 1 Zr — 64 Ti — 35 Cu.

4,126,450
CONTINUOUSLY CASTABLE ZINC BASE ALLOY

Michael A. Lathrop, Muncie, and Robert D. Mantyla, Yorktown, both of Ind., assignors to Ball Corporation, Muncie, Ind.

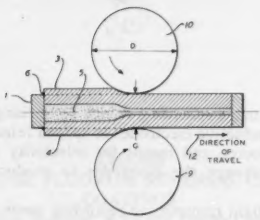
Filed Mar. 29, 1977, Ser. No. 782,333
Int. Cl.[2] C22C *18/04*
U.S. Cl. 75—178 AM **5 Claims**

1. An improved continuously castable zinc base alloy consisting essentially of 9–10 percent by weight aluminum, 5–6 percent by weight copper and 0.02–0.04 percent by weight magnesium, the balance being zinc.

4,126,451
MANUFACTURE OF PLATES BY POWDER-METALLURGY

Harbhajan S. Nayar, Plainfield, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Mar. 30, 1977, Ser. No. 782,674
Int. Cl.[2] B22F *3/14*
U.S. Cl. 75—208 R **25 Claims**



1. A method of manufacturing a plate from a metal powder which comprises the steps of:
- placing a layer of the powder inside a die having a cavity which has an opening at an end of the die;
- disposing a punch into the opening so as to partially intrude and partially protrude from the end of the die, and to enclose the powder in an assembly comprising the punch and die;
- heating the assembly to a temperature sufficient to allow consolidation of the powder; and
- compressing the heated assembly by rolling to apply pressure to the punch to consolidate and elongate the layer of powder.

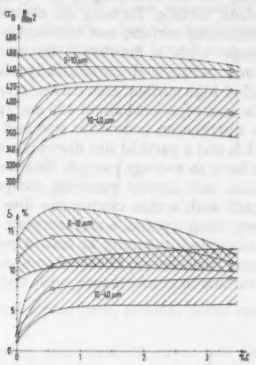
11. A method of manufacturing a plate from a metal powder which comprises the steps of:
- placing a layer of the powder inside a metal die having a cavity which has a first opening in a first end of the die and a second opening in a second end opposite to the first end of the die;
- disposing a first metal punch into the first opening so as to partially intrude and partially protrude from the first end of the die;
- disposing a second metal punch into the second opening so as to partially intrude and partially protrude from the second end of the die, and to enclose the powder in an assembly comprising the first punch, second punch, and die;
- heating the assembly to a temperature sufficient to allow consolidation of the powder; and
- compressing the powder by passing the heated assembly between two rolls which apply pressure to the first punch and the second punch to consolidate and elongate the layer of powder.

21. An assembly adapted to be heated and rolled to form a composite including a layer of consolidated powder, comprising:
- a metal die having a cavity;
- at least one metal punch disposed to intrude a distance d_i into the cavity and protrude a distance d_p from an end of the die;
- means for fixing the punch to the die; and
- a layer of metal powder which is enclosed in the cavity by the die and the punch, and which has a thickness T_M and a fractional density ρ_c; wherein
- the intrusion ratio d_i/d_p for each punch is within the range 0.5 to 2, and
- the protrusion ratio $P/(1-\rho_c)T_M$ is within the range 1 to 2, where P is the total distance by which the punches protrude from the ends of the die.

4,126,452
PHOSPHORUS CONTAINING STEEL POWDER AND A METHOD OF MANUFACTURING THE SAME

Jan R. Tengzelius, Viken, and Lars-Erik Svensson, Hoganas, both of Sweden, assignors to Höganäs AB Fack, Hoganas, Sweden

Filed Jun. 24, 1977, Ser. No. 809,797
Claims priority, application Sweden, Jun. 24, 1976, 7607285
Int. Cl.[2] C22C *1/04*
U.S. Cl. 75—251 **9 Claims**



1. In a phosphorus-containing steel powder for use in the manufacture of sintered components of high toughness comprising steel powder substantially free of phosphorus and having good compressibility and in intimate admixture therewith a ferrophosphorus powder having a phosphorus content of at least about 2.8% by weight in proportions to provide a phosphorus content of from about 0.2 to about 1.5% by weight of the phosphorus-containing steel powder, the improvement which comprises:
- said ferrophosphorus powder having a carbon content exceeding about 0.3% by weight whereby said phosphorus-containing steel powder when sintered produces components of high toughness with reduced risk of brittleness.

4,126,453
COMPOSITION FOR A FLUIDIZING FLUX IN THE PRODUCTION OF IRON AND STEEL

Willis A. Heck, Brackenridge, and Roy E. Ferree, Valencia, both of Pa., assignors to ESM, Inc., Valencia, Pa.

Continuation of Ser. No. 687,097, May 17, 1976, abandoned, which is a division of Ser. No. 330,961, Feb. 9, 1973, Pat. No. 3,982,929. This application Jul. 5, 1977, Ser. No. 812,700
Int. Cl.[2] C22B *9/10*
U.S. Cl. 75—257 **7 Claims**

1. A basic fluidizing flux composition to reduce the viscosity of the impurities during the production of iron and steel and provide a more fusible slag consisting essentially of discrete substantially spherical particles formed by agglomerating an admixture of particulate iron oxides in an amount of about 20–80 percent by weight, aluminum and aluminum oxides in an

amount of about 2–80 percent by weight, and silica in an amount of about 5–60 percent by weight.

4,126,454

IMAGING PROCESS UTILIZING CLASSIFIED HIGH SURFACE AREA CARRIER MATERIALS

Lewis O. Jones, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 30, 1974, Ser. No. 474,489
Int. Cl.[2] G03G *9/10, 13/09*
U.S. Cl. 96—15 D **6 Claims**

1. An electrostatographic imaging process comprising the steps of providing an electrostatographic imaging member having a recording surface, forming an electrostatic latent image on said recording surface, and contacting said electrostatic latent image with a developer mixture comprising finelydivided toner particles electrostatically clinging to the surface of classified high surface area carrier materials having a specific surface area of at least about 150 cm^2/gram, a particle size volume distribution geometric standard deviation of less than about 1.3, and a particle size distribution wherein the carrier particles have an average particle diameter of less than about 100 microns, said carrier materials comprising nickel-zinc ferrite coated with a thin continuous film of a coating composition comprising styrene, a methacrylate ester, and an organosilicon compound, whereby at least a portion of said finelydivided toner particles are attracted to and deposited on said recording surface in conformance with said electrostatic latent image.

4,126,455

ELECTROSTATOGRAPHIC IMAGING PROCESS AND RELATED APPARATUS

Nero R. Lindblad, Palmyra; Gordon E. Johnson, Webster, and James H. Sharp, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 634,312, Nov. 21, 1975, abandoned, which is a division of Ser. No. 480,780, Jun. 19, 1974, which is a division of Ser. No. 277,544, Aug. 3, 1972, Pat. No. 3,973,843.
This application Apr. 8, 1977, Ser. No. 785,906
Int. Cl.[2] G03G *13/14*
U.S. Cl. 96—1 SD **25 Claims**

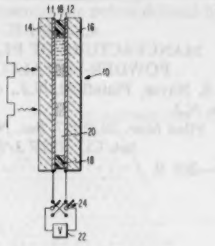
1. In an imaging process comprising the steps of providing an imaging member having a recording surface, forming an electrostatic latent image on said recording surface, developing said latent image by contacting said recording surface with an electrostatographic developer material comprising finely-divided toner particles electrostatically clinging to the surface of carrier particles, and removing at least a portion of any residual developer material from said recording surface; wherein the improvement consists of depositing a film on said recording surface, said film having an average thickness of from about 1A to about 200A, and wherein said film consists of a lubricant selected from the group consisting of phthalic acid, isophthalic acid, terephthalic acid, and the metal and ammonium salts thereof.

4,126,456

VISUAL IMAGE RECORDING DEVICE

Robert V. Pole, Los Gatos; Meredith D. Shattuck; Glenn T. Sincerbox, both of San Jose, and Harald W. Werlich, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1975, Ser. No. 582,045
Int. Cl.[2] G03G *5/02*
U.S. Cl. 96—1 E **10 Claims**



1. A visual image recording device comprising:
a pair of conductive electrodes in spaced relationship;
a voltage source and means for selectivity applying this voltage between the electrodes to produce an electric field;
a normally light transmitting recording medium occupying the space between said electrodes, said medium having the properties of being both photo-ionizable and capable of electrochemically producing colored species;
means for exposing said medium to a pattern of activating radiation of an intensity sufficient to produce a latent image of said pattern, and
means to apply the voltage of a first polarity between said electrodes to produce an enhanced visual image corresponding to said pattern.

4,126,457

EVAPORATION TECHNIQUE FOR PRODUCING HIGH TEMPERATURE PHOTORECEPTOR ALLOYS

Anthony J. Ciuffini, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 30, 1973, Ser. No. 365,353
Int. Cl.[2] G03G *5/082*
U.S. Cl. 96—1.5 R **11 Claims**

1. In a process for obtaining a flexible photoreceptor having improved thermal stability and durability comprising a flexible metal-or metal-coated substrate and at least one arsenic-rich selenium photoconductor layer obtained by effecting evaporation and condensation of selenium alloy from a heated donor source;
the improvement comprising,
utilizing as heated donor source during evaporation and condensation, a plurality of receptacles containing selenium alloy of varying concentrations within the range of about 0%–40% arsenic by weight, the receptacles being

individually or collectively heated by heating means to provide at least substantial partial evaporation from two or more receptacles simultaneously onto substrate or interface-substrate layers; to effect a profile of increasing arsenic concentration from the substrate or interface-substrate layers while

simultaneously heating and maintaining the temperature of the substrate or interface-substrate layers during evaporation and condensation, at no less than about the glass transition temperature of the selenium alloy of lowest arsenic concentration to be evaporated from the donor source and not less than about 85° C.

4,126,458

INORGANIC FLUORIDE REVERSAL CARRIER COATINGS

John A. Creatura, Webster, N.Y., and Joseph L. Mincer, Lewisville, Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 11, 1977, Ser. No. 823,807

Int. Cl.[2] G03G *9/10, 9/14*

U.S. Cl. 96—1 SD **7 Claims**

1. An electrostatographic developer mixture for use in reversal development of negatively charged electrostatic latent images, said developer mixture comprising finely-divided toner particles electrostatically clinging to the surface of carrier particles having an average diameter of from between about 30 microns and about 1,000 microns, said carrier particles consisting essentially of a metallic core and a coating thereon consisting essentially of inorganic fluoride, said carrier particles being characterized as possessing negative triboelectric charging properties and said coating having been formed by oxidation of said carrier surface.

6. An electrostatographic developer mixture in accordance with claim 1 wherein said core is selected from the group consisting of iron, steel, ferrite, and nickel.

4,126,459

THIOETHER SUBSTITUTED SILVER HALIDE SOLVENTS

Richard B. Greenwald, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 686,587, May 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 563,306, Apr. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 463,263, Apr. 23, 1974, abandoned. This application Sep. 30, 1976, Ser. No. 728,127

The portion of the term of this patent subsequent to May 25, 1993, has been disclaimed.

Int. Cl.[2] G03C *5/54, 5/38, 1/48, 1/40*

U.S. Cl. 96—29 R **113 Claims**

21. A photographic process comprising the steps of

(1) developing exposed silver halide of an imagewise exposed photosensitive silver halide emulsion layer carried on a support with a silver halide developing agent in aqueous alkaline solution;

(2) reacting unreduced silver halide of said photosensitive emulsion with a silver halide solvent which forms a silver complex soluble and diffusible in said aqueous alkaline solution, said silver halide solvent being a compound of the formula $M-[(X)_n-T]_m$ wherein M represents an aliphatic or aromatic moiety, Y—A, wherein A is an atom selected from O, N and C ionizable in said alkaline solution to the corresponding $O^{\ominus}$, $N^{\ominus}$ and $C^{\ominus}$ anion and Y represents the residue of said moiety; T is R—S— or

wherein R is a monovalent hydrocarbon radical and R′ represents the carbon atoms necessary to complete an aromatic or aliphatic ring; X represents a methylene group; *n* is a whole number from 0 to 5; and *m* is 1 or 2, said —S— of said R—S— and said

being positioned alpha, beta, gamma, delta, epsilon or zeta to said anion;

(3) transferring said complex silver salt to a superposed image-receiving layer; and

(4) reducing said transferred complex silver salt to provide a silver image.

4,126,460

LIGHT SENSITIVE PRINTING PLATE COMPRISING A MATTED OVERLAYER

Yoshio Okishi, Yoshida, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 30, 1976, Ser. No. 718,504

Claims priority, application Japan, Aug. 28, 1975, 50-104285

Int. Cl.[2] G03C *1/72;* G03F *7/02*

U.S. Cl. 96—35.1 **20 Claims**

1. A light-sensitive printing plate precursor for forming dot images comprising a support having provided thereon a light-sensitive layer and as a separate layer over said light-sensitive

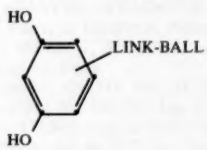
layer a non-light sensitive matted layer, the matted layer being removed upon development and containing a light absorbing agent possessing an absorption in the wave length region to which the light sensitive layer coated on said support is sensitive, said matted layer comprising a surface micropattern having the following surface roughness: the height of an individual micropattern element is in the range of about 2 to about 40μ; the width of an individual micropattern element is in the range of about 20 to 10,000μ; the distance between individual coated micropattern elements adjacent to each other is in the range of about 50 to about 100,000μ; and the surface roughness of the micropattern is in the range of from about 0.05 to about 20μ as H_{CLA} (JIS).

4,126,461
BLACK-AND-WHITE PHOTOGRAPHIC ELEMENTS AND PROCESSES

David A. Pupo, Churchville; Samuel J. Ciurca, Jr.; Grant M. Haist, both of Rochester, and James R. King, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 13, 1977, Ser. No. 806,244
Int. Cl.[2] G03C *5/26, 1/06, 1/40*
U.S. Cl. 96—50 R **37 Claims**

1. A black-and-white photographic element comprising a support bearing an image-forming layer comprising a photographic silver halide emulsion, a color developing agent or a precursor of a color developing agent and an image-forming nondiffusible resorcinol coupler having the structure:



where

LINK represents —NHCO—, —COHN—, —NHCONH—, —$NHSO_2$—, or —COO—; and

BALL represents phenyl, naphthyl, substituted phenyl, substituted naphthyl, alkyl, of 3 to 20 carbon atoms or a heterocyclic group containing 5 to 10 nuclear atoms,

the element yielding upon exposure and development to a density of between 0.3 and 2.0, a spectrophotometric curve in which the density of any 10 nm interval in the range of 420 to 650 nm does not depart by more than ten percent from the mean density over that range.

4,126,462
PROCESS FOR FORMING A PHOTOGRAPHIC MAGENTA DYE IMAGE

Takaya Endo; Shui Sato; Shoji Kikuchi; Tamotsu Kozima; Tugumoto Usui; Hiroyuki Imamura, and Koichi Takabe, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

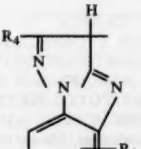
Filed Feb. 23, 1976, Ser. No. 660,335
Claims priority, application Japan, Feb. 25, 1975, 50-23279
Int. Cl.[2] G03C *7/00, 1/40*
U.S. Cl. 96—56.5 **7 Claims**

1. A process for forming a photographic magenta dye image comprising subjecting a silver halide photographic lightsensitive material to color development in the presence of a 2-equivalent 5-pyrazolone or pyrazolo (1,5-a) benzimidazole magenta coupler and an aromatic primary amine color developer, said coupler represented by the formula (II) or (III);

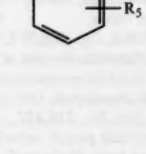
$$A\text{-}(OSO_2\text{—}R_1)_m \quad \text{(II)}$$

$$(A'\text{—}OSO_2\text{-})_n R_2 \quad \text{(III)}$$

wherein R_1 is a member selected from the group consisting of a straight chained, branched or cyclic alkyl, alkenyl, aryl, a 5- or 6-membered heterocyclic radical containing nitrogen, oxygen or sulfur, said members may have at least one substituent selected from the group consisting of halogen, nitro, hydroxy, carboxy, amino, sulfo, alkyl, alkenyl, aryl, alkoxy, aryloxy, arylthio, arylazo, acylamino, carbamoyl, ester, acyl, acyloxy, sulfonamido, sulfamoyl, sulfonyl, morpholino, piperidyl, piperadyl and imidazolyl; R_2 is selected from the group consisting of alkylene and arylene, which may have at least one substituent selected from the group consisting of lower alkyl, nitro and arylazo; A and A′ are respectively an m-valent and n-valent residue of said magenta coupler resulting from removing the split-off group —OSO_2—R_1 or —OSO_2—R_2 from a coupling position of said coupler and which is represented by the following formulae



(IV)



(V)

wherein R_3 is selected from the group consisting of alkyl and cycloalkyl, which may have at least one substituent selected from the group consisting of halogen, nitro, cyano, aryl, alkoxy, aryloxy, carboxy, alkoxycarbonyl, aryloxycarbonyl, sulfo, sulfamoyl, carbamoyl, acylamino, ureid, heterocyclic,

arylsulfonyloxy and oxo; aryl, and a 5- or 6-membered heterocyclic ring containing nitrogen, oxygen or sulfur, which may have at least one substituent selected from the group consisting of halogen, alkyl, alkoxy, aryloxy, carboxy, alkoxycarbonyl, acylamino, carbamoyl, alkylsulfonamido, arylsulfonamido, cyano and nitro; R_4 is selected from the group consisting of alkoxycarbonyl, aryloxycarbonyl, methoxy, ethoxy, phenoxy, tolyloxy, ethylthio, propylthio, phenylthio, carboxy, amino, N-alkylamino, N-arylamino amido, N-alkylacylamino, N-arylacylamino, ureid, thioureid, carbamoyl, guanidino, sulfamoyl and sulfonyl radical; R_5 is one to four monovalent radicals selected from the group consisting of hydrogen, halogen, alkyl, alkoxy, acylamido, carbamoyl and a sulfonyl radical; *m* is 1; and *n* is 2.

4,126,463

METHOD OF STABILIZING PHOTOGRAPHIC SILVER HALIDE EMULSION LAYERS

Herbert Gernert, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 8, 1977, Ser. No. 831,592

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1976, 2641284

Int. Cl.[2] **G03C** *1/76, 1/48, 1/30*

U.S. Cl. 96—67 **3 Claims**

1. Method of stabilizing photographic gelatine-silver halide emulsion layers containing polyoxyalkylene compounds against increase in fogging and loss in gradation during storage, characterised in that from 0.35 to 35 mg of thiosulfate per m^2 is applied to the silver halide emulsion layer containing a polyoxyalkylene compound by superimposing over said silver halide emulsion layer a protective layer of gelatin and a stabilizer consisting of a water-soluble thiosulfate in an amount of from 20 to 2000 mg of the water-soluble thiosulphate per 100 g of gelatin, and then drying the layers.

4,126,464

LOW TEMPERATURE ADHESIVES FOR PHOTOGRAPHIC MATERIALS

John R. Dann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 10, 1977, Ser. No. 805,269

Int. Cl.[2] **G03C** *1/48, 1/78, 1/76, 1/40*

U.S. Cl. 96—73 **46 Claims**

17. In a photographic film unit comprising:

A. a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material;

B. a dye image-receiving layer;

C. means for discharging an alkaline processing composition within the film unit in contact with the photosensitive layer;

D. a neutralizing layer for neutralizing the alkaline processing composition;

E. a barrier timing layer which is permeable by the alkaline processing composition after a predetermined time located between the neutralizing layer and the photosensitive silver halide emulsion;

the film unit containing a silver halide developing agent, and at least one adhesive layer, the improvement wherein the adhesive layer contains a non-pressure sensitive, heat sealable adhesive composition having high bonding strength at temperatures below about 75° C., consisting essentially of a mixture of:

A. from about 1 to about 99 percent by weight of a block copolymer formed from about 10 to about 50 percent by weight of end blocks of at least one vinylbenzene and from about 90 to about 50 percent by weight of at least one conjugated diolefin; and

B. from about 99 to about 1 percent by weight of a copolymer formed from about 40 to about 85 percent by weight of at least one alkene having up to 5 carbon atoms in its backbone and from about 60 to about 15 percent by weight of vinyl acetate.

4,126,465

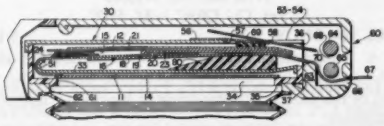
FILM PACK WITH MEANS FOR URGING POSITIVE AND NEGATIVE SHEETS TOGETHER

Pierre E. Nel, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 12, 1974, Ser. No. 523,038

Int. Cl.[2] **G03C** *1/48;* **G03B** *19/10;* **G03D** *9/02*

U.S. Cl. 96—76 C **4 Claims**



3. In a photographic film pack having an exposure opening in the forward wall and an exit opening at one transverse end and containing at least one diffusion transfer film unit including a positive sheet element and a negative sheet element positioned within a container in unregistered stacked relationship for exposure of said negative sheet element, a pressure plate positioned between said negtive sheet and said positive sheet when said sheets are in said unregistered stacked position said negative sheet element carrying a rupturable pod retaining a light processing composition, and manually operable web means adapted to bring said negative sheet element into superposed face-to-face registration with said positive sheet element

after said exposure and further adapted to effect subsequent withdrawal of said superposed registered sheet elements as a unit from said container for processing, the improvement which comprises:

resilient means for urging said superposed registered sheet elements together during the withdrawal of said film unit from said container and a positive holder mounted on the rear wall of said container and including a block of frictional material in forward urging engagement with the back surface of said positive sheet elements, said positive holder and said resilient means adapted to cooperate in applying light compressive force to said superposed registered sheet elements as said film unit is withdrawn therebetween and from said container.

4,126,466

COMPOSITE, MASK-FORMING, PHOTOHARDENABLE ELEMENTS

Leo Roos, New Shrewsbury, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 490,340, Jul. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 200,611, Nov. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 108,577, Jan. 21, 1971, abandoned. This application Apr. 22, 1976, Ser. No. 679,349

Int. Cl.[2] G03C *1/84, 5/00*

U.S. Cl. 96—84 UV **7 Claims**

1. A composite mask-forming photohardenable element which is essentially transparent to actinic light in the visible region of the spectrum comprising in successive intimate surface contact:

(a) a cover sheet,

(b) a resist layer, photohardenable by exposure to actinic radiation and soluble in a solvent which will not dissolve the layer in its hardened state;

(c) a separate and distinct solvent-soluble macromolecular organic polymer layer containing at least one ultraviolet absorbing dye or pigment, said polymer layer having an optical density of at least 1.5 to ultraviolet radiation and being soluble in a solvent which will not dissolve said resist-forming layer in its hardened state, and

(d) a support film, one of said layers being selectively more adherent to said support film or said cover sheet, and each of said layers adhering strongly enough to the other to resist rupture when said support film or said cover sheet is stripped from a contiguous surface of one of said layers.

4,126,467

SILVER HALIDE PHOTOGRAPHIC MATERIALS HAVING IMPROVED ANTI-STATIC PROPERTIES

Takushi Miyazako; Itsuki Toriya, and Masuhiko Hirose, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 24, 1978, Ser. No. 871,886

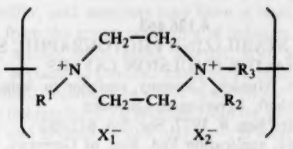
Claims priority, application Japan, Jan. 24, 1977, 52-7032; Jul. 12, 1977, 52-83231

Int. Cl.[2] G03C *1/78*

U.S. Cl. 96—87 A **10 Claims**

1. A silver halide photographic material having improved anti-static properties, comprising a support having thereon at least one silver halide emulsion layer and wherein at least one compound having a molecular weight of about 1,000 to about 50,000 and a recurring unit represented by the following general formula (1)

(I)



wherein R_1 and R_2, which may be the same or different, each represents an alkyl group, a cycloalkyl group, an aralkyl group, an aryl group or an alkenyl group, and R_1 and R_2 can combine to form an alkylene group; R_3 represents an alkylene group or an aralkylene group, each having up to ten carbon atoms; and X_1^- and X_2^- each represents an anion; is present in an outermost layer of said photographic material, in a layer contiguous to a subbing layer for a silver halide emulsion layer in said photographic material, and/or in a layer contiguous to the outermost layer provided on the opposite side of the support to that on which said silver halide emulsion layer is present in said photographic material.

4,126,468

RADIATION SENSITIVE COMPOSITIONS OF QUATERNARY AMMONIUM SALT AND CARBOXYLIC ACID SENSITIZER

John M. Kitteridge, and Robert J. Armstrong, both of, Leeds, England, assignors to Vickers Limited, London, England

Continuation-in-part of Ser. No. 700,506, Jun. 28, 1976, abandoned. This application Apr. 18, 1977, Ser. No. 788,299

Claims priority, application Australia, Jun. 24, 1976, 15261/76; Jun. 28, 1976, 4709/76

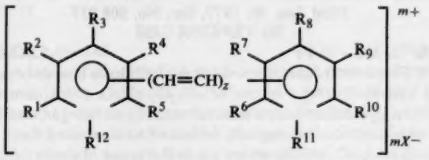
Int. Cl.[2] G03C *1/00;* G03F *7/02*

U.S. Cl. 96—88 **19 Claims**

1. A radiation sensitive composition comprising

(i) a quaternary ammonium salt of the type which will accept

at least one electron on exposure to radiation to form a substance capable of causing metal to be deposited onto said substance from an electroless plating solution in contact with said substance and comprising a salt of said metal and a reducing agent, said quaternary ammonium salt having the general formula



wherein R^1 to R^{10} are hydrogen or halogen atoms or organic substituents; R^{11} and R^{12}, if present, are each halogen atoms or organic substituents or together represent a divalent organic substituent; Z is zero or an integer; X^- is an anion; m = 1 or 2; and at least one of the nitrogen atoms is quaternary; provided that R^{11} and R^{12} are not each $-CH_3$ groups or are not together a $-CH_2CH_2-$ group when each of R^1 to R^{10} is a hydrogen atom and Z is zero, and

(ii) a chemical sensitiser for improving the speed of photoreduction of the quaternary ammonium salt, said sensitiser having the general formula

wherein R^{21} is substituted or unsubstituted aryl group, an arylalkenyl group, or an arylalkyl group; R^{22} is a substituted or unsubstituted aryl group, an alkyl group, an arylalkyl group, an arylalkenyl group, a carboxylic acid group, a carboxylic acid salt group, or a hydrogen atom; or R^{21} and R^{22} together represent a bivalent species; and X represents a carboxylic acid group or a carboxylic acid salt group.

4,126,469

SOLUTION AND PROCEDURE FOR DEPOSITING A PROTECTIVE PRECOATING ON SURFACES OF ZINC-COATED FERROUS METAL PARTS AGAINST CORROSION IN PRESENCE OF WATER

Michel Longuepee, Cantin, and Noel Dreulle, Auby-lez-Douai, both of France, assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.

Continuation of Ser. No. 541,513, Jan. 16, 1975, abandoned. This application Dec. 23, 1977, Ser. No. 863,673

Claims priority, application France, Jan. 23, 1974, 74 02178

Int. Cl.[2] C09D *5/08*; C23F *7/12, 11/08*

U.S. Cl. 106—14.12 **11 Claims**

1. A solution intended for depositing rapidly a coating which protects the surfaces of zinc-coated ferrous metal parts, characterized by containing water as the solvent and per liter of final solution, from 1 to 40 grams of sodium metasilicate, from 14 to 40 milliliters of phosphoric acid having a specific gravity of 1.71, from 1 to 40 grams of sodium nitrate, from 10 to 50 grams of anhydrous zinc chloride, the pH of the aforesaid solution being adjusted to a value between 2.3 and 3.8.

4,126,470

LIGHT CONCRETE AND METHOD OF PREPARING THE SAME

Hans-Rüdiger Braun, Palling; Hans-Günter Rosenbauer, Trostberg, both of Germany; André Coin, Paris, and Roland Davril, Maurepas, both of France, assignors to Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft, Trostberg, Germany and Societe Auxiliaire d'Entreprises, Paris, France

Filed Sep. 12, 1977, Ser. No. 832,667

Claims priority, application France, Sep. 21, 1976, 76 28332

Int. Cl.[2] C04B *7/35*

U.S. Cl. 106—95 **14 Claims**

1. A pourable concrete mixture consisting essentially, per cubic meter, of 100 to 1400 liters cellular aggregate, 200 to 350 kg Portland cement, 70 to 175 kg mixing water, and an admixture in an amount of 1.5% to 5% of the weight of said cement, said admixture including a water repellent material, a polyalkyleneglycol, and an agent capable of reducing the amount of said mixing water required for making said mixture fluid and for curing said cement, said agent being a naphthol formaldehyde condensate having sulfo groups, a phenol formaldehyde condensate having sulfo groups, a lignosulfonate, a combination of a sugar acid and an amino acid, or a melamine-formaldehyde condensate containing sulfo groups.

4,126,471

METHOD AND APPARATUS FOR THE THERMAL TREATMENT OF ALKALI-CONTAINING PULVERIZED RAW MATERIAL TO BE USED IN THE MANUFACTURE OF CEMENT

Horst Herchenbach, Troisdorf; Hubert Ramesohl, Bergisch Gladbach; Rudolf Kuhs, Lohmar, and Kurt Schneider, Cologne, all of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Jul. 11, 1977, Ser. No. 814,735

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2630907

Int. Cl.[2] C04B *7/44*

U.S. Cl. 106—100 **9 Claims**

1. In a method for the thermal treatment of alkali-containing raw material for the manufacture of cement in which said raw material is preheated in a preheater, sintered in a furnace, and cooled in a material cooler and wherein an alkali-free exhaust from said cooler is conveyed to said preheater for preheating said raw material and alkali-containing exhaust gases from said

furnace are contacted with a portion of said raw material in a heat exchanger to condense alkali salts thereon, the improvement which comprises:

diverting a portion of said alkali-containing exhaust gases prior to said heat exchanger,

removing dust from the diverted portion, and

removing the dust-free portion from the system.

4,126,472

PROCESS OF MAKING A LITHOGRAPHIC PHOTOSENSITIVE SILVER HALIDE EMULSION HAVING REDUCED SUSCEPTIBILITY TO PRESSURE CONTAINING AN IRIDIUM COMPOUND, A HYDROXYTETRAZAINDENE AND A POLYOXYETHYLENE

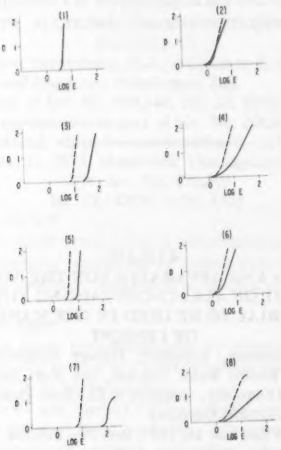
Takeo Sakai, and Tadashi Ogawa, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 552,901, Feb. 25, 1976, abandoned. This application Feb. 18, 1977, Ser. No. 770,143

Claims priority, application Japan, Feb. 24, 1974, 49-22134

Int. Cl.[2] G03C *1/30*

U.S. Cl. 96—110 **10 Claims**



1. A method of producing a lithographic photosensitive material having a high gamma value and reduced susceptibility to the effects of pressure for reproducing line and half-tone dot images comprising adding a water soluble ir idium compound to a silver halide photographic emulsion containing at least 60 mole % silver chloride in a ratio of about 10^{-6} to 10^{-4} mole of said iridium compound per mole of the silver halide in said silver halide photographic emulsion at the first or second ripening procedure of said silver halide photographic emulsion; further adding a hydroxytetrazaindene compound and a polyoxyethylene compound to said photographic emulsion; and coating the photographic emulsion on a support.

4,126,473

FLAME RETARDING COMPOSITIONS FOR CELLULOSIC BOARDS

Igor Sobolev, Orinda, and Erwin Panusch, Livermore, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Jun. 20, 1977, Ser. No. 808,017

Int. Cl.[2] C09K *3/28*

U.S. Cl. 106—15 FP **12 Claims**

1. Flame retardant composition for cellulosic boards consisting essentially (A) a source of $AL_2O_3.xH_2O$; (B) a naturally occurring calcium-borate mineral; and (C) an inorganic sulfate or phosphate-containing salt, wherein (A) is selected from the group of $Al_2O_3.xH_2O$, where x is in the range of about 0.5–3.0, bauxite and mixtures thereof; (B) is selected from the group of ulexite, colemanite and mixtures thereof; and (C) is selected from the group of salts having the formulae M_mHSO_4, $M_m(HPO_4)_n$, $M_m(H_2PO_4)_n$, $X_mH_{4-m}P_2O_7$, where M is Na, K, NH_4, Mg and Al and X is Na, K, Mg and NH_4 and m and n depend on the valency of M, $Ca(H_2PO_4)_2$, K_3PO_4, Na_3PO_4 and the metaphosphates of Na and K; and wherein in the flame retardant composition, the percent weight ratios of A:B:C are kept within the range of about 10–90:5–85:5–40.

7. A flame-retarded cellulosic board containing a flame retardant composition consisting essentially (A) a source of $Al_2O_3.xH_2O$; (B) a naturally occurring calcium-borate mineral and (C) an inorganic sulfate or phosphate-containing salt, wherein (A) is selected from the group of $Al_2O_3.xH_2O$, where x is in the range of about 0.5–3.0, bauxite and mixtures thereof; (B) is selected from the group of ulexite, colemanite and mixtures thereof; and (C) is selected from the group of salts having the formulae M_mHSO_4, $M_m(HPO_4)_n$, $M_m(H_2PO_4)_n$, $X_mH_{4-m}P_2O_7$, where M is Na, K, NH_4, Mg and Al and X is Na, K, Mg or NH_4 and m and n depend on the valency of M, $Ca(H_2PO_4)_2$, K_3PO_4, Na_3PO_4 and the metaphosphates of Na and K; and wherein in the flame retardant composition, the percent weight ratios of A:B:C are kept within the range of about 10–90:5–85:5–40; and wherein the quantity of flame retardant composition in the board is kept within the range of about 25 to about 50% by weight of the flame-retarded board.

4,126,474

REFRACTORY FOR ALUMINUM-MELTING FURNACES

Raymond W. Talley, Newark, Del.; Ray A. Henrichsen, Glen Burnie, and Wate T. Bakker, Severna Park, both of Md., assignors to General Refractories Company, Bala Cynwyd, Pa.

Filed Aug. 19, 1977, Ser. No. 826,181

Int. Cl.[2] C04B *35/10, 35/18, 35/66*

U.S. Cl. 106—63 **11 Claims**

1. In an unfired phosphate-bonded alumina or alumino-silicate refractory for lining aluminum-melting furnaces and other containers for molten aluminum, the binder in said refractory consisting essentially of a wet phosphate binder, the improvement comprising the addition of 0.5 to 30% by weight of $BaSO_4$, said refractory having improved resistance to metal penetration and to dross and metal adherence and improved storage life.

10. In an unfired phosphate-bonded refractory for lining aluminum-melting furnaces, said refractory consisting essentially of alumina, water, and phosphoric acid, the improvement comprising the addition of 0.5% to 30% by weight of $BaSO_4$, said refractory having improved resistance to molten metal penetration and to dross and metal adherence and improved storage life.

4,126,475

STRUCTURAL BUILDING COMPONENTS AND METHOD FOR PRODUCTION ON THE BASIS OF LATERITE

Torben C. Hansen, and Thomas Ringsholt, both, c/o Building Materials Laboratory, Technical Univ. of Denmark, Bldg. 118, DK-2800 Lyngby, Denmark

Division of Ser. No. 556,015, Mar. 6, 1975, Pat. No. 4,048,276, which is a continuation of Ser. No. 290,260, Sep. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 236,205, Mar. 20, 1972, abandoned. This application Jul. 25, 1977, Ser. No. 818,994

Claims priority, application United Kingdom, Mar. 22, 1971, 7517/71

Int. Cl.[2] **C04B** *1/00*

U.S. Cl. 106—118 **12 Claims**

1. A lateritic structural building component pressure formed in a mold from a mixture of 2–15 weight percent of lime (as CaO) and 55–93 weight percent of laterite, the laterite containing iron oxide and silicon and aluminium in the form of oxides and/or silicates thereof, the silicon content of the laterite including from 10 to 50 percent quartz sand based on the weight of the laterite and the laterite containing at least 8 weight percent of aluminium calculated as Al_2O_3, the building component comprising a compressed mixture of iron oxide and silicon oxide and/or silicate, and the reaction product of lime, water and aluminium, and in which said reaction product comprises stable calcium aluminate hydrates predominately of the formula $3CaO.Al_2O_3.6H_2O$, and the building component containing a free lime (as CaO) content of less than one or two percent, and the component having a compressive strength higher than 140 kg/cm^2.

4,126,476

ALUMINOUS QUARTZ CERAMICS AND METHOD

David G. Grossman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jul. 6, 1976, Ser. No. 702,895

Int. Cl.[2] **C03C** *3/22, 3/04*

U.S. Cl. 106—39.7 **4 Claims**

1. A lithium aluminosilicate glass-ceramic article comprising a principal crystal phase composed of a lithium-containing beta-quartz solid solution, said solid solution containing silica and alumina in a molar ratio (SiO_2:Al_2O_3) in the range of about 3.5–7 and lithia in an amount providing a Li_2O:Al_2O_3 mole ratio of at least about 0.6, wherein at least part of the beta-quartz solid solution crystal phase has been converted by lithium extraction to an aluminous quartz crystal phase characterized by:

(a) a composition comprising alumina and silica in a molar ratio (SiO_2:Al_2O_3) in the range of about 3.5–7;

(b) a hexagonal crystal structure; and

(c) an X-ray diffraction pattern comprising intensities (I/I_O) and interplanar spacings (d) conforming substantially to the following:

Crystal Plane	I/I_o	d(A)
100	19	4.33
101	100	3.38
110	4	2.49
102	4	2.298
200	3	2.156
201	2	2.006
112	11	1.834
202	1	1.686
211	5	1.558
203	7	1.388

4,126,477

BETA-SPODUMENE GLASS-CERAMICS EXHIBITING EXCELLENT DIMENSIONAL STABILITY

Richard F. Reade, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 6, 1977, Ser. No. 794,347

Int. Cl.[2] **C03B** *32/00;* **C03C** *3/22*

U.S. Cl. 106—39.7 **4 Claims**

1. A method for making an opaque a glass-ceramic article demonstrating an average coefficient of thermal expansion (0°–1000° C.) less than about 20×10^{-7}/° C. and a change in length of less than about 750 PPM after an exposure of 1000 hours to temperatures up to 950° C. consisting essentially of fine-grained crystals of beta-spodumene solid solution, mullite and/or corundum, $ZrTiO_4$ solid solution, and, occasionally, ZrO_2 solid solution uniformly dispersed within a glassy matrix, said crystals constituting at least 75% by volume of the article which consists of the steps:

a. melting a batch for a glass consisting essentially, in weight percent on the oxide basis, of 3.7–7.5% Li_2O, 18.5-33% Al_2O_3, 55-75% SiO_2, and 3.4-5.0% Ro_2, wherein RO_2 consists of 1.5-2.5% TiO_2 and 1-2.7% ZrO_2 in a molar ratio TiO_2:ZrO_2 between about 3:1-1:1;

b. simultaneously cooling the melt to at least within the transformation range and shaping a glass article of a desired configuration therefrom;

c. heating said glass article to a temperature between about 1150°–1350° C. to cause the crystallization in situ of fine-grained crystals of beta-spodumene solid solution, mullite and/or corundum, $ZrTiO_4$ solid solution, and, occasionally, ZrO_2 solid solution; and then

d. cooling the crystallized article to room temperature.

4. An opaque glass-ceramic article made in accordance with the method of claim 1.

4,126,478

PRODUCTION OF PERICLASE GRAIN

Jan Bowman, Orinda, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Oct. 17, 1977, Ser. No. 842,820

Int. Cl.[2] **C04B** *35/04*

U.S. Cl. 106—58 **9 Claims**

1. Method of making a dense periclase refractory grain having less than 8 volume percent porosity, over 95% MgO, less than 2% total SiO_2, and a CaO:SiO_2 ratio not over about 0.8, whereby the predominant secondary phases are forsterite and monticellite, said method comprising: (a) selecting a magnesium hydroxide containing, on the ignited basis, not over 1.5% CaO, not over 1.0% SiO_2, and at least 98% MgO, the balance being normal impurities; (b) adding sufficient silica less than 44 microns in size to produce a CaO:SiO_2 weight ratio not over 1.0, and from 0 to 1% Cr_2O_3, based on the total ignited weight of the magnesium hydroxide and silica and Cr_2O_3 additives; (c) drying said admixture to a water content of less than 8%, the dried hydroxide containing not over 3% free MgO, both percentages being based on the dry weight of the magnesium hydroxide; (d) compacting the dried admixture at a pressure of at least 10 tons per square inch to produce a compact having a bulk density of at least 1.5 g/cc; and (e) firing the compacts to a temperature of at least 1700° C.

4,126,479

MAGNESIUM ALUMINATE SPINEL BOND FOR REFRACTORY BRICK

Ralph B. Videtto, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Sep. 15, 1977, Ser. No. 833,546

Int. Cl.[2] **C04B** *35/04*

U.S. Cl. 106—62 **7 Claims**

1. A refractory shape having 16 vol % or less porosity in either the fired or unfired form consisting essentially of from 60 to 80 percent magnesia refractory aggregate coarser than 44

microns and sized for good brickmaking to achieve maximum density and from 40 to 20 percent refractory matrix material finer than 44 microns, said matrix material being adapted to form magnesium aluminate spinel upon heating to a temperature of at least 800° C. and consisting essentially of from 15 to 25 percent magnesia containing at least 95% MgO and having a specific surface of at least 5,000 cm^2/g, and from 4 to 15 percent alumina having a specific surface of from 2 to 30 m^2/g and an average particle size of less than 5 microns, all percentages being by weight and based on the total weight of aggregate and matrix material, said refractory exhibiting no expansion, as compared with its formed but unfired state, after having been heated to a temperature of 1400° C.

4. Method of making a magnesium aluminate spinel bonded refractory comprising: (a) admixing from 60 to 80 percent magnesia refractory aggregate coarser than 44 microns and sized for good brickmaking to achieve maximum density with from 40 to 20 percent refractory matrix material finer than 44 microns, said matrix material being adapted to form magnesium aluminate spinel upon heating to a temperature of at least 800° C. and consisting essentially of from 15 to 25% magnesia containing at least 95% MgO and having a specific surface of at least 5,000 cm^2/g and from 4 to 15% alumina having a specific surface of from 2 to 30 m^2/g and an average particle size less than 5 microns; (b) compacting the admixture to a porosity of 16 vol % or less; and (c) heating the compacted admixture to at least 800° C.; all percentages being by weight and based on the total weight of aggregate and matrix material, and said refractory exhibiting no expansion, as compared with its formed but unfired state, after having been heated to a temperature of 1400° C.

4,126,480
AQUEOUS SUSPENSIONS

Dalton C. MacWilliams, Alamo, Calif., and James R. Wirt, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 644,381, Dec. 29, 1975, abandoned. This application Feb. 27, 1978, Ser. No. 881,480
Int. Cl.² C04B 7/02
U.S. Cl. 106—100 **23 Claims**

1. In the wet process for the production of cement solids wherein limestone and clay are ground in the presence of water to form a pumpable kiln feed slurry, the improvement which comprises adding to said slurry an amount of a water-demand reducing system sufficient to synergistically reduce the water demand of said slurry, said system comprising (1) a water soluble salt of a styrene-maleic anhydride copolymer having a molecular weight of from about 1000 to about 5000 and being characterized by a ratio of from about 50 to about 67 mole percent of styrene and from about 50 to about 33 mole percent of maleic anhydride and (2) a compound selected from the group consisting of alkali metal carbonates, bicarbonates, oxalates, silicates, aluminates and borates and ammonium carbonates, bicarbonates, oxalates and borates, (1) and (2) being employed in a ratio of from about 1:1 to about 1:10 by weight.

4,126,481
DRAG REDUCING WAX

Ronald N. Sampson, Murrysville, Pa., and Harold O. McCaskey, Allendale, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 18, 1976, Ser. No. 733,594
Int. Cl.² C08L 1/08
U.S. Cl. 106—191 **6 Claims**

1. A solid wax lubricant composition, consisting essentially of a rigid wax matrix, which will remain a hard solid without melting at temperatures of up to about 10° C., and from about 3 wt.% to about 45 wt.% of a water-soluble thermoplastic polymer selected from the group consisting of polyacrylamide, carboxy methyl cellulose, sodium carboxy methyl cellulose, vinyl pyridine, poly(ethylene oxide) and mixtures thereof disposed within the wax matrix, said solid matrix being effective to allow the polymer to be leached out of the matrix upon contact with water, at a rate of at least 100 parts of polymer per 1,000,000 parts of water, to provide a slippery, boundary lubricant film on the wax surface.

4,126,482
THIOL POLYESTERS

Jean Baptiste Signouret, Billere, and Albert Nicolau, Pau, both of France, assignors to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

Continuation of Ser. No. 545,409, Jan. 30, 1975, abandoned. This application Oct. 22, 1976, Ser. No. 734,869
Int. Cl.² C08L 95/00; C09D 3/24
U.S. Cl. 106—274 **5 Claims**

1. A composition comprising a bituminous compound containing 0.2 to 34% by weight of a polyester the molecule of which contains 0.5 to 10 atoms of sulfur for each carboxylic group present therein, the polyester comprising:

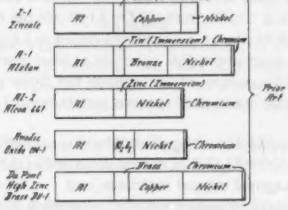
(a) an alcohol residue of esterification to which is attached a thiol (—SH) group, the alcohol residue consisting of an alkylene having 1 to 8 carbon atoms and is connected at a first end to a carboxyl group on the polyacid and at a second end to a group containing sulfur, and

(b) an aliphatic polyacid the polyacid consisting of a polymer of a non-saturated fatty acid chosen from the group consisting of oleic, elaidic, linoleic, linolenic or ricinoleic acid, or combinations thereof.

4,126,483
METHOD OF ADHERENCY OF ELECTRODEPOSITS ON LIGHT WEIGHT METALS

William A. Donakowski, Dearborn Heights, and John R. Morgan, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 803,200, Jun. 3, 1977. This application Oct. 19, 1977, Ser. No. 843,756
Int. Cl.² C23G 1/12, 1/22
U.S. Cl. 134—3 **2 Claims**



1. A method of treating an aluminum article prior to plating, said aluminum article having high adherence of plating thereover, comprising:

(a) selecting said aluminum article to contain 1–8% zinc in the alloyed condition,

(b) cleaning said aluminum article to be substantially free of aluminum oxide,

(c) immediately thereafter immersing said cleansed article in an aqueous solution prepared by adding 6–11 oz. of a powder additive per gallon of water, said additive consist-

ing of: 68% sodium hydroxide, 0.5% minimum trisodium phosphate, 15% sodium metaphosphate, and 10% maximum sodium carbonate,

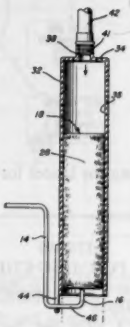
(d) rinsing for 1–5 minutes at 100°–150° F.

4,126,484

PAINT ROLLER CLEANER AND METHOD

Charles C. Monteiro, R.F.D. Sandwich Rd., Falmouth, Mass. 02541

Filed Jun. 1, 1977, Ser. No. 802,479
Int. Cl.² B08B *7/100, 3/12*
U.S. Cl. 134—34 **7 Claims**



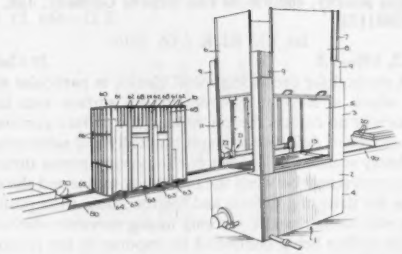
1. In combination with a cylindrical paint roller having an outer nap layer, a paint roller cleaner comprising a body having an elongated bore formed therein closed at one end and opening outwardly of said body at the other end, said body including means for admitting liquid under pressure into said one end of said bore, said open end of said body including means operative to releasably retain a paint roller therein, the bore having snugly and telescopically received therein the cylindrical outer nap layer equipped paint roller with no clearance between the outer extremity of the nap layer and the surfaces of said body defining said bore.

4,126,485

MACHINE FOR CLEANING POTS AND PANS

Howard M. Sadwith, Colts Neck, N.J., assignor to Industrial Washing Machine Corporation, Matawan, N.J.

Filed May 19, 1977, Ser. No. 798,353
Int. Cl.² B08B *3/02*
U.S. Cl. 134—46 **13 Claims**



1. A machine for cleaning pans, said pans being adapted to be supported in the machine on an elongated rack having along its length a first set of compartments for receiving said pans and a second set of compartments each being substantially unobstructed and disposed between adjacent ones of said first plurality of compartments, the machine comprising:

a housing having an enclosed chamber for receiving said rack, said housing including a front access door and first and second side access doors for providing access to said chamber, said first and second access doors being disposed opposite one another and transverse to said front access door;

means for providing washing and rinsing fluid within said chamber, said means including oscillating spray header means having a main header portion rotatably disposed within said chamber opposite said front access door, said header portion having along its length similarly distributed adjacent first and second pluralities of spray arms extending outward therefrom in the direction of said front access door;

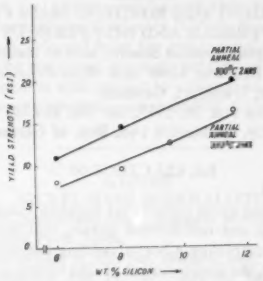
and switch and alignment means for permitting alignment of said second set of rack compartments with said spray arms as said rack is moved through said chamber between said first and second access doors and for inhibiting oscillation of said spray header until alignment is reached.

4,126,486

PRODUCING IMPROVED METAL ALLOY PRODUCTS

Larry R. Morris, Yarker, and John D. Thomson, Regina, both of Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Nov. 14, 1975, Ser. No. 632,005
Claims priority, application United Kingdom, Nov. 15, 1974, 49639/74
Int. Cl.² C22F *1/04*
U.S. Cl. 148—2 **7 Claims**



3. A method of producing an aluminum-silicon alloy sheet product which comprises continuously casting an aluminum-silicon alloy in the form of a thin slab at a growth rate in excess of 25 cm/min. for solidifying silicon in the form of elongated rods in a size range of 0.05–0.5 microns essentially uniformly dispersed throughout the entire thickness of said slab, subjecting the cast slab to at least 60% reduction to fragment said silicon rods into finely divided separate particles, said slab being subjected to at least a final 10% reduction by cold-rolling, to convert it into final sheet form, said cold-rolled sheet being subjected to annealing at a temperature in the range of 250°–400° C., said alloy consisting essentially of the following composition

Si 7–10%
Cu Up to 1.0%
Mg Up to 1.0%
Mn Up to 1.0%
Others Up to 0.3% each (up to 1.0% total)
Al Remainder.

4,126,487

PRODUCING IMPROVED METAL ALLOY PRODUCTS (AL-FE ALLOY AND AL-FE-SI ALLOY)

Larry R. Morris, Yarker, and John D. Thomson, Regina, both of Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Nov. 14, 1975, Ser. No. 632,019

Claims priority, application United Kingdom, Nov. 15, 1974, 49640/74; Nov. 15, 1974, 49641/74

Int. Cl.[2] C22F *1/04*

U.S. Cl. 148—2 **9 Claims**

1. A method of producing an aluminum alloy sheet product from an Al-Fe binary, ternary or higher order alloy which comprises casting the alloy in the form of a slab of a thickness less than 25 mm at a growth rate in excess of 25 cm/min. for depositing intermetallics in the form of elongated rods in a size range of 0.05–0.5 microns diameter, subjecting the cast slab to at least 60% reduction by rolling for fragmenting the intermetallic rods, said rolled sheet being subjected to final annealing at a temperature in the range of 250–400° C., for producing sheet having a yield strength greater than 15 k.s.i. and a tensile elongation greater than 15%, said alloy consisting essentially of the composition:

Fe 1.1–2.5%
Si up to 2.0%
Zn up to 2.0%
Ni up to 1.0%
Mn up to 0.5%
Cu up to 1.0%
Mg up to 1.0%
Others up to 0.3% each, up to 1% total
Al balance

said alloy being castable to develop less than 5.0% by volume of intermetallics that are formed from the melt in a casting operation.

4,126,488

BORIDING AGENT FOR BORIDING MASS PRODUCED PARTS OF FERROUS AND NON-FERROUS METALS

Helmut Kunst, and Christian Scondo, both of Hanau, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed Jun. 28, 1977, Ser. No. 810,781

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1976, 2633137

Int. Cl.[2] C23F *7/00*

U.S. Cl. 148—6 **13 Claims**

1. In a boriding agent suitable for boriding mass production parts of ferrous and non-ferrous metals, said boriding agent being a paste comprising a boron yielding material, activator, filler and water, the improvement of also having present in the composition 2 to 8 weight % of pyrogenic silica.

4,126,489

METHOD OF MAKING CATHODE HEATERS

Paul D. Williams, Portola Valley, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 380,013, Jul. 17, 1973, abandoned, which is a continuation of Ser. No. 41,720, May 27, 1970, abandoned, which is a continuation of Ser. No. 621,194, Mar. 7, 1967, abando..ed. This application Jul. 21, 1975, Ser. No. 597,954

Int. Cl.[2] C23C *11/02, 11/08*

U.S. Cl. 148—6.3 **8 Claims**

1. A method for the manufacture of a heater for an indirectly heated cathode of an electron tube which comprises:

(a) oxidizing the surface of a heater wire in the presence of an oxidizing gas to form an oxidized exposed surface on said wire, said wire being composed of a refractory metal selected from the group consisting of tungsten and molybdenum; and

(b) reducing the exposed oxidized surface of the wire formed by step (a) to the metallic state of the refractory metal to form a rough, black surface on the wire, step (b) being the

HEAT A W OR MO WIRE IN AIR FOR 5 MINUTES AT 725°C
COAT THE WIRE WITH ALUMINA
HEAT THE WIRE IN A WET H2 FURNACE FOR 5 MINUTES AT 1650°C
DIP THE WIRE IN AN AMMONIUM TUNGSTATE SOLUTION
HEAT THE WIRE IN A WET H2 FURNACE FOR 10 MINUTES AT 1000°C

final step for forming the heater for the indirectly heated cathode.

4,126,490

COMPOSITION FOR FORMING CHROMATE COATING

Kohsaku Aoki, Sagamihara, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed May 1, 1978, Ser. No. 901,378

Int. Cl.[2] C23F *7/26*

U.S. Cl. 148—6.21 **6 Claims**

1. An aqueous composition for forming a chromate coating on the surface of zinc metal or zinc alloy substantially free of hexavalent chromium compounds comprising:

a trivalent chromium present compound within the range of about 1 to 50 grams per liter;

an alum present within the range of about 3 to 130 grams per liter; and

a vanadate present within the range of about 0.2 to 10 grams per liter.

4,126,491

METHOD AND APPARATUS FOR PRODUCING METAL BLANKS, IN PARTICULAR STEEL SLABS, WHICH AT LEAST IN A PREDETERMINED SURFACE AREA HAVE SUBSTANTIALLY NO DEFECTS

Per-Olle Karlsson, Oxelösund, Sweden, assignor to Gränges Oxelösund Järnverk AB, Sweden

Filed Jun. 30, 1975, Ser. No. 591,937

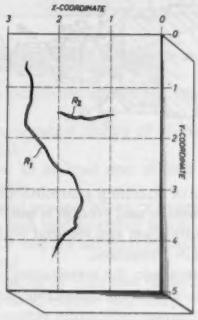
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1974, 2431173

Int. Cl.[2] B23K *7/06, 7/10*

U.S. Cl. 148—9.5 **39 Claims**

1. A method for producing metal blanks, in particular steel slabs, which at least in a predetermined surface area have substantially no defects therein, at least the surface portion to be made free of defects being systematically and substantially completely scanned by at least one inspecting means through relative movement between the inspecting means and the slab surface for detecting defects and for recording their position on the slab surface, and a working means movable relative to the slab surface being controlled in response to the recorded defects, which removes the defects detected, characterized in the steps of dividing the at least predetermined surface area of the steel slab to be inspected into coordinate sub-areas of a two-dimensional coordinate system, determining the positioning of the coordinate sub-areas relative to the slab surface for each individual slab by marks on the steel slab, scanning with the at least one inspecting means the predetermined surface area of the steel slab along at least one coordinate direction of the two-dimensional coordinate system and detecting visible

and invisible defects at and closely beneath the predetermined surface of the slab as regards location and depth for each coordinate sub-area, determining and storing the maximum depth to which the defect extends from the surface into the material of the slab for each sub-area, controlling at least one of the working depth and the type of working of at least one working means operable separately and independently from the inspecting means in accordance with the coordinate sub-



areas of the two-dimensional coordinate system determined with respect to its position relative to the steel slab by the marks on the steel slab and in accordance with the maximum defect depth stored for the particular surface sub-area to be worked, and positioning the slab in at least one of the inspecting and working positions by contacting a front and longitudinal side surface of the slab with stop means arranged at substantially a right angle to one another.

4,126,492

BRAKE DISC AND PROCESS FOR PRODUCING THE SAME

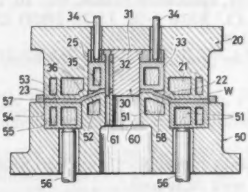
Hiromu Okunishi, Sayamashi; Hideki Nakaji, Kawagoeshi; Hiroyuki Suwa, Sayamashi, and Hideaki Sato, Kawagoeshi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 767,341, Feb. 10, 1977. This application Sep. 13, 1977, Ser. No. 832,777

Claims priority, application Japan, Feb. 17, 1976, 51-16783[U]; Apr. 2, 1976, 51-36732; Apr. 17, 1976, 51-43964

Int. Cl.[2] C21D *1/62*

U.S. Cl. 148—12 E **8 Claims**



1. A process for producing a brake disk characterized in that it is fabricated substantially of a martensitic stainless steel plate material containing at least 10% chromium and having a suitable surface hardness for a brake, including the step of:

integrally combining an annular disk member shaped by press-quenching said material to be of a hardness required for the function of a brake with a separate hub fitting member.

4,126,493

PROCESS FOR DEOXIDATION OF REFRACTORY METALS

Jörg Wurm, Kälberau, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed Aug. 6, 1973, Ser. No. 385,732

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1972, 2240658

Int. Cl.[2] C22F *1/18*

U.S. Cl. 148—20 **13 Claims**

1. A process for deoxidation of a refractory metal selected from the group consisting of niobium, tantalum, chromium, molybdenum, tungsten and rhenium comprising heating the metal under an inert protective gas at 600° to 1300° C. in a salt melt consisting essentially of:

(a) an alkali halide or alkaline earth halide, or

(b) an alkali halide or alkaline earth halide, together with a fluoride of a metal of Group IVb through VIIb of the periodic system, at least 10% of the salt melt being fluoride.

4,126,494

MAGNETIC TRANSFER RECORD FILM

Nobutake Imamura, Tokyo; Yoshinori Mimura, Tachikawa, and Toshihiko Kobayashi, Mitaka, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Oct. 19, 1976, Ser. No. 733,929

Claims priority, application Japan, Oct. 20, 1975, 50-125357; Oct. 20, 1975, 50-125358

Int. Cl.[2] C22C *19/00, 28/00, 38/00*

U.S. Cl. 148—31.57 **2 Claims**

1. A magnetic transfer record film material disposed in a thin film having a thickness exceeding 500Å , an easy axis of magnetization in a direction perpendicular to the film surface and a magnetic coercive force of less than 500 Oe, and comprising an amorphous alloy consisting essentially of a rare earth metal selected from the group consisting of Gd, Tb and Ho and having a concentration X wherein $0.15 < X < 0.35$ and the balance a metal selected from the group consisting of Fe, Co and Ni, and the saturation magnetic moment of the film material being minimum with respect to a change in the concentration X within a temperature range of 100° C. from room temperature.

4,126,495

NICKEL-BASE SUPERALLOY

Subrata Ghosh, Southfield, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation-in-part of Ser. No. 386,894, Aug. 9, 1973. This application Apr. 11, 1977, Ser. No. 786,730

Int. Cl.[2] C22C *19/05*

U.S. Cl. 148—32 **4 Claims**

1. An alloy having a nominal composition consisting essentially of the following constituents in about the stated weight percentages:

Aluminum	6.75–10.00
Chromium	8.0–12.00
Titanium	0.80–2.50
Cobalt	2.00–6.00
Molybdenum	2.50–4.00
Tantalum	0.95–4.85
Tungsten	0–1.25
Columbium	0–0.60
Carbon	0–1.00
Boron	0–1.00
Zirconium	0–0.80
Rare Earths	0–1.00
Beryllium	0–1.0

Nickel (including incidental impurities) the Balance, and wherein the alloy is particularly characterized by a room temperature gamma prime type of matrix and by the formation

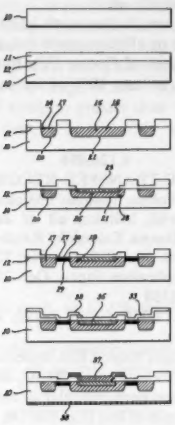
of a delta NiAl type of precipitate within the matrix at elevated temperatures.

4,126,496

METHOD OF MAKING A SINGLE CHIP TEMPERATURE COMPENSATED REFERENCE DIODE

Rudolph R. Verderber, Scottsdale, Ariz., assignor to Siemens Corporation, Scottsdale, Ariz.

Division of Ser. No. 635,241, Nov. 25, 1975, Pat. No. 4,075,649. This application Jul. 5, 1977, Ser. No. 812,762
Int. Cl.[2] H01L *21/22, 29/90*
U.S. Cl. 148—187 **12 Claims**



1. A process for manufacturing a single chip temperature compensated reference diode comprising the steps:

a. forming a plurality of laterally displaced regions of semiconductive material of opposite conductivity type in a wafer of semiconductive material of one conductivity type to provide reverse PN junctions at the interfaces between said regions and the remainder of said wafer;

b. forming a layer of semiconductive material of said one conductivity type in one of said regions to provide a forward PN junction at the interface of said one region and said layer; and

c. forming a region of semiconductive material of said opposite conductivity type, between and contiguous to two of said laterally displaced regions, having a higher conductivity than said laterally displaced regions to form a reverse breakdown PN junction having a lower breakdown voltage than said reverse PN junctions.

4,126,497

DOUBLE-BASE NITROCELLULOSE PROPELLANT

Craig E. Johnson, Indian Head, and Paul F. Dendor, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 13, 1973, Ser. No. 424,587
Int. Cl.[2] C06B *25/20, 25/18, 21/00*
U.S. Cl. 149—100 **16 Claims**

1. A method for preparing a double-base propellant comprising:

a. forming a slurry of nitrocellulose by mixing the nitrocellulose with a liquid under high speed, high shear conditions;

b. adding a plasticizer to the slurry to form a plasticized nitrocellulose, and

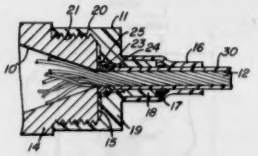
c. drying and curing the plasticized nitrocellulose.

4,126,498

BOOTS FOR WIRE ROPE TERMINATIONS

Fred W. Donecker, Madison, Conn., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sep. 21, 1977, Ser. No. 835,467
Int. Cl.[2] B29C *27/00*
U.S. Cl. 156—86 **6 Claims**



1. In the method of attaching a termination to the end section of a wire rope, wherein said section is inserted into the socket portion of said termination and secured within said socket, the improvement which comprises:

a prior to insertion into the termination

1. passing a tube of heat shrinkable plastic over said end section a distance sufficiently removed from the terminus thereof;

2. inserting the end section into the head of a boot, said boot comprising

(i) a tube-like portion having an inner diameter tightly fitting the circumferential surface of said end section and an effective outer diameter smaller than the inner diameter of said heat shrinkable tube, and

(ii) a flange portion integral with and surrounding the trailing end of said tube-like portion, and

(b) after securing the end section in the socket

3. connecting said boot flange portion and said socket so that the interface thereof is sealed

4. sliding said heat shrinkable tubing over the tube-like portion of said boot so that the interface of the lead end of the boot and wire rope is covered by said heat shrinkable tubing and

5. heating shrinking said heat shrinkable tubing so that the interface of said boot and said wire rope is sealed.

4,126,499

METHOD OF MANUFACTURE OF A RIGID, PERFORATED CLOTH

Pierre Payen, Lyons, France, assignor to L. Payen & Cie, Lyons, France

Filed Aug. 30, 1977, Ser. No. 829,054
Claims priority, application France, Sep. 10, 1976, 76 27527
Int. Cl.[2] B32B *1/08, 31/26;* D03D *15/00*
U.S. Cl. 156—148 **9 Claims**

1. A method for producing a rigid, perforated cloth comprising:

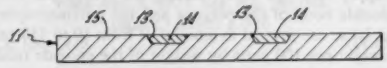
a. wrapping a core yarn with a covering yarn made from a thermoplastic polymer to produce a completely wrapped yarn,

b. weaving said wrapped yarn into a perforated cloth in both warp and weft directions,

c. heating said cloth to a temperature in excess of the melting temperature of said thermoplastic covering polymer but below the deformation and melting temperatures of said core yarn in order to melt said covering thermoplastic polymer,

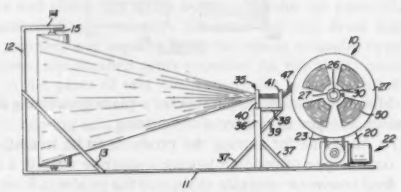
d. cooling said heated cloth to provide a rigid, perforated cloth in which the points of intersection of the wrapped yarn adhere to each other due to the prior melting of said thermoplastic polymer.

4,126,500
METHODS OF MAKING INLAYS USING LASER ENGRAVING
Paul N. Palanos, 3852 Sherbrook Dr., Santa Rosa, Calif. 95404
Filed Apr. 14, 1977, Ser. No. 787,470
Int. Cl.[2] B32B 31/00
U.S. Cl. 156—154 5 Claims



1. A method of making inlays using laser engraving comprising the steps of:
laser engraving a positive image of the inlay on a first layer of material;
laser engraving a negative image of the inlay on a second layer of material;
applying adhesive to at least one of said first and second layers of material;
mating said first and second layers of material such that said positive image and said negative image are engaged at a common surface and are adhered by said adhesive to form a composite; and
removing a portion of at least one of said first and second layers of material to expose said inlay.

4,126,501
ARCHERY TARGET AND METHOD OF MAKING SAME
Lionel Croll, 10 W. 15th St., Barnegat Light, N.J. 08006
Filed Mar. 16, 1977, Ser. No. 778,005
Int. Cl.[2] B31F 1/12
U.S. Cl. 156—183 5 Claims



1. The method of manufacturing a target comprising the steps: providing an elongate web of freely flexible plastic film, feeding said web endwise, passing said endwise fed web through a constriction to form longitudinally extending random gathers in the web, applying a retarding force to the feeding of web, winding said web about a mandrel against said retarding force into a cylinder having generally coplanar successively outwardly extending convolutions, and securing said cylinder in its cylindrical form.

4,126,502
MANUFACTURE OF PHARMACEUTICAL DOSAGE FORMS
Dennis J. Dabal, Whippany, and Joseph J. Williams, West Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Continuation of Ser. No. 640,608, Dec. 15, 1975, abandoned.
This application Apr. 29, 1977, Ser. No. 792,428
Int. Cl.[2] A61K 9/70; B31C 13/00
U.S. Cl. 156—184 1 Claim

1. In a method of preparing solid pharmaceutical unit dosage forms comprising loading one or more medicaments to a therapeutically inert, edible web having a composition such that it is amenable to being watersealed, fabricating said web into a solid geometric form of predetermined dimensions having said medicament substantially internalized, said form being divisible into a plurality of unit dosage forms, unitizing said geometric form into said plurality of unit dosage forms and sealing said unit dosage forms to completely internalize said medicament wherein said procedures include at least one non-destructive testing operation, said fabrication procedure comprises cutting said loaded web transversely to form substantially uniform lengths of loaded web each divisible into a plurality of dosage units, corrugating each length of web to form same into a loosely wound coil and convolute winding said loose coil to form a substantially solid rod, the improvement in sealing said rods which comprises applying a predetermined amount of water sufficient to seal the trailing edge of said rod, said application being limited to the point on the surface of said rod wherein said seal is required, and subsequently drying said rod.

4,126,503
MANUFACTURE OF PHARMACEUTICAL DOSAGE FORMS
William E. Gardner, Wyckoff, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Continuation of Ser. No. 640,609, Dec. 15, 1975, abandoned.
This application Apr. 29, 1977, Ser. No. 792,377
Int. Cl.[2] A61K 9/70; B31C 13/00
U.S. Cl. 156—184 1 Claim

1. In a method of preparing solid pharmaceutical unit dosage forms comprising loading one or more medicaments to a therapeutically inert, edible web, having a composition such that it is amenable to being watersealed, fabricating said loaded web into a solid geometric form of predetermined shape having said medicament substantially internalized, said form being divisible into a plurality of unit dosage forms, unitizing said geometric form into said plurality of unit dosage forms and sealing said unit dosage forms to completely internalize said medicament wherein said fabricating procedure comprises cutting said loaded web transversely to form substantially uniform lengths of web. corrugating each length of web to form same into a loosely wound coil and convolute winding said loose coil to form a substantially solid rod, the improvement in sealing said rods which comprises contacting said coils with a sufficient amount of water as a fine spray to dampen them and subsequently drying said rods.

4,126,504
ADHESIVE COMPOSITIONS AND METHOD EMPLOYING SAME
Leon E. Wolinski, Cheektowaga, and Peter D. Berezuk, Buffalo, both of N.Y., assignors to Pratt & Lambert, Inc., Buffalo, N.Y.
Filed Jan. 27, 1977, Ser. No. 763,145
Int. Cl.[2] B32B 7/00; C08L 63/00
U.S. Cl. 156—310 83 Claims

1. A method of adhesively joining a pair of mating surfaces comprising applying to at least one of said mating surfaces a composition comprising a free radical additional polymerization catalyst activator in a sufficient amount to activate a free radical addition polymerization catalyst by contact,
said activator composition being free of any free radical catalyst,
applying to at least one of said mating surfaces an activatable, curable adhesive comprising a solution of a nonreactive elastomeric polymer selected from the group consisting of homopolymers and copolymers of butadiene and lower alkyl substituted butadienes, copolymers of styrene or acrylonitrile or methylmethacrylate with butadiene or lower alkyl substituted butadienes, carboxy modified acrylonitrile-butadiene copolymers, neoprene, butyl rubber, silicones other than dimethyl silicone, polysulfide rubber, pyridine-butadiene copolymer, chlorosulfonated polyethylene, polyethers of epichlorhydrin, and the said polymers and copolymers having vinyl group-containing monomers grafted thereon,
said elastomeric polymer being dissolved in a free radical addition polymerizable acrylic monomer and a free radi-

cal addition polymerizable acid monomer co-polymerizable with said acrylic monomer,

said solution containing a catalytically effective amount of a non-activated free radical addition polymerization catalyst having a half-life of at least about ½ hour at 85° C.,

joining said pair of mating surfaces in a contact relationship, and maintaining said contact relationship until said adhesive cures to a set.

25. A method of adhesively joining a pair of mating surfaces comprising applying to at least one of said mating surfaces a free radical addition polymerization catalyst activator in a sufficient amount to activate a free radical addition polymerization catalyst by contact,

applying to at least one of said mating surfaces an activatable, curable adhesive comprising a solution of a nonreactive elastomeric polymer resin selected from the group consisting of homopolymers and copolymers of butadiene and lower alkyl substituted butadienes, copolymers of styrene or acrylonitrile or methylmethacrylate with butadiene or lower alkyl substituted butadienes, carboxy modified acrylonitrile-butadiene copolymers, neoprene, butyl rubber, silicones other than dimethylsilicone, polysulfide rubber, pyridine-butadiene copolymer, chlorosulfonated polyethylene, polyethers of epichlorhydrin, and the said polymers and copolymers having vinyl group-containing monomers grafted thereon, and

an epoxide resin,

said elastomeric polymer and epoxy resin being dissolved in a free radical addition polymerizable acrylic monomer and a free radical addition polymerizable acid monomer copolymerizable with said acrylic monomer,

said solution containing a catalytically effective amount of a non-activated free radical addition polymerization catalyst having a half-life of at least about ½ hour at 85° C.,

said epoxide resin being non-reactive with any other component of the adhesive at ambient temperatures.

4,126,505
ADHESIVE COMPOSITIONS

Edward W. Garnish, Saffron Walden, and Robert G. Wilson, Cambridge, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

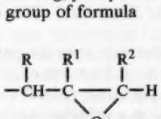
Continuation of Ser. No. 521,224, Nov. 5, 1974, abandoned. This application Oct. 28, 1976, Ser. No. 736,290

Int. Cl.[2] C09J *3/16*; C08L *63/00*

U.S. Cl. 156—330 **35 Claims**

1. A composition which rapidly develops tack after mixing consisting essentially of

(a) an epoxide resin having, per epoxide molecule, more than one 1,2-epoxide group of formula



directly attached to oxygen, sulfur, or nitrogen, where either R and R^2 independently of one another represent hydrogen, in which case R^1 denotes hydrogen or methyl, or R and R^2 conjointly represent $-CH_2CH_2-$, in which case R^1 denotes hydrogen,

(b) a polymercaptan having at least two mercaptan groups per average molecule,

(c) a polyene having an average molecular weight of not more than 2,000, per average molecule, at least two ethylenic double bonds, each β to an atom of oxygen, sulfur, or nitrogen, the sum of such ethylenic double bonds in (c) and of mercaptan groups in (b) being at least 5, and

(d) a curing agent for the epoxide resin, which is either a compound having at least three hydrogen atoms directly attached to aliphatic or cycloaliphatic amino nitrogen atoms present in an amount of from about 0.8 to 1.2 amino-hydrogen equivalents of the amine per 1,2-epoxide equivalent of the epoxide resin, or a tertiary amine having at least one nitrogen atom directly attached to carbon atoms of aliphatic or cycloaliphatic groups exclusively and at most two hydrogen atoms attached to amino nitrogen atoms present in an amount of from 1 to 40 parts by weight per 100 parts by weight of the epoxide resin, and wherein the polymercaptan is employed in a quantity sufficient to supply from 0.8 to 1.1 mercaptan groups per ethylenic double bond of the polyene and the polymercaptan plus polyene are present in amount of from 10 to 150 parts by weight per 100 parts by weight of the epoxide resin.

4,126,506
MATERIAL-HANDLING APPARATUS

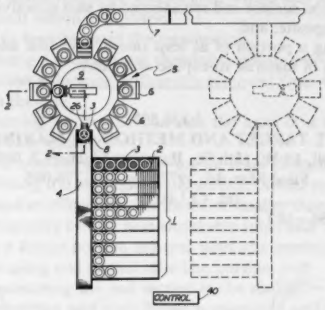
Josef Marosan, Jonkoping, Sweden, assignor to Smalands Industrirationalisering AB, Huskvarna, Sweden

Filed Jun. 2, 1977, Ser. No. 802,665

Claims priority, application Sweden, Jun. 8, 1976, 7606397

Int. Cl.[2] B29H *17/00*

U.S. Cl. 156—396 **24 Claims**



1. Material-handling apparatus for a plant processing different sizes or types of products comprising:

(a) a magazine for storing the products to be treated, each size or type of product having a separate supply, a single feed conveyor operable to receive the products from all of said supplies, and to advance a product from said supplies to the terminal end of the feed conveyor, and having stop means to stop the conveyor when a product is positioned at its terminal end;

(b) a plurality of product-treating machines aligned side-by-side with the terminal end of said conveyor;

(c) an outgoing conveyor for removing the treated products from said plurality of machines and having a feed end aligned within said machines;

(d) transfer mechanism for transferring the product selectively from the terminal end of the feed conveyor to a product-treating machine and from a product-treating machine to the feed end of the outgoing conveyor;

(e) a fixing unit associated with the terminal end of the feed conveyor to engage the product thereon and position it in a predetermined position;

(f) indexing means including stop means on the transfer mechanism and a plurality of individual stop means, at least one for each treating machine, operable selectively to index the transfer mechanism to a selected treating machine; and

(g) control means interconnecting said magazine, said treating machines, said transfer mechanism and said indexing means to discharge a product of a given size or type onto the feed conveyor when any selected treating machine for that size or type of product is in condition to receive the product, and conditioning said apparatus to cause said transfer mechanism to transfer the product from the feed conveyor to said selected treating machine.

4,126,507

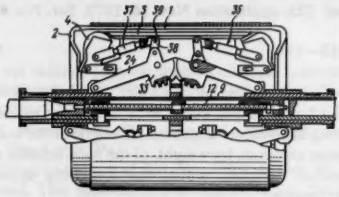
TIRE-BUILDING DRUM

Vladimir A. Kim, ulitsa Uritskogo, 53, kv. 41; Jury I. Samokhvalov, ulitsa Dzerzhinskogo, 65-a, kv. 82; Boris M. Petrov, prospekt Oktyabrya, 34/21, kv. 22; Engels K. Golovkin, ulitsa Tumanova, 14-a, kv. 153, and Galina N. Artamonova, ulitsa Svobody, 52/39, kv. 51, all of, Yaroslavl, U.S.S.R.

Filed Apr. 6, 1977, Ser. No. 785,044

Int. Cl.[2] B29H *17/16*

U.S. Cl. 156—415 **11 Claims**



1. A tire-building drm comprising: drum sectors with fixedly mounted shoulders; drum sectors with movably mounted shoulders, said drum sectors with movably mounted shoulders being uniformly located between said drum sectors with fixedly mounted shoulders; a drum hub; a screw drive; a mechanism for radially moving said drum sectors with fixedly mounted shoulders and a mechanism for radially moving said drum sectors with movably mounted shoulders, each of said mechanisms for moving the drum sectors with fixedly and movably mounted shoulders consisting of two parts, each of which has annular slides which are connected to said screw drive and levers which are articulated to corresponding drum sectors and slides, the slides incorporated in the parts of said mechanisms being coaxially mounted on said drum hub to move together and separately on the hub in mutually opposite directions; and toothed gears provided on the levers incorporated in the parts of said mechanisms for moving said drum sectors are arranged to be in constant mesh with each other for interconnecting said parts in each of the mechanisms for moving the drum sectors.

4,126,508

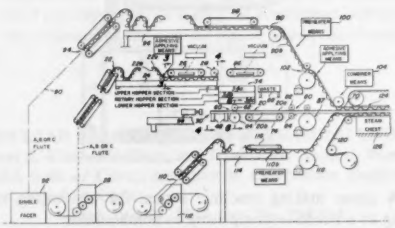
APPARATUS FOR FORMING MULTI-FLUTE-LAYER CORRUGATED BOARD

Walther J. Hoelzinger, Vienna, Austria, assignor to Boise Cascade Corporation, Boise, Id.

Filed Sep. 13, 1976, Ser. No. 722,699

Int. Cl.[2] B31F *1/20;* **B65H** *1/30*

U.S. Cl. 156—512 **11 Claims**



1. Apparatus for forming a continuous horizontal first corrugated paperboard web of indefinite length having a planar upper facer layer, and a corrugated lower layer the flutes of which extend longitudinally of the web, comprising

(a) means for supplying a succession of corrugated sections colinearly arranged in end to end relation, each of said sections including a planar fibrous upper layer, and a corrugated fibrous lower layer the flutes of which extend linearly of said colinearly-arranged sections, one of said layers of each of said sections extending at the leading end of the section beyond the other layer, said other layer extending at the other end of said section beyond said one layer;

(b) means for positioning the leading end of one section in superposed relation relative to the trailing end of a proceeding section, thereby to cause the ends of the flutes of the corrugated layer of one section to be parallel with and arranged above the ends of the flutes of the other section, and the adjacent ends of the planar facer layers of said sections to be in overlapping relation; and

(c) splicing means for adhesively bonding together the adjacent ends of the sections to form the continuous first web, the corrugated layers at the adjacent ends of successive sections being bonded in flute-enmeshing relation and the planar layers being bonded in end-overlapping relation;

said section supplying means including hopper means for storing a stack of said sections adjacent said section positioning means, said hopper means including

(1) a stationary upper hopper portion for storing in stacked relation a plurality of sections the flutes of which extend normal to a vertical plane containing the longitudinal axis of said first web;

(2) a rotatable hopper portion arranged beneath said upper hopper portion for rotation about its central vertical axis;

(3) means for discharging sections from the bottom of said upper hopper portion into the top of said rotatable hopper portion; and

(4) means for rotating said rotatable hopper portion about its central vertical axis through an angle of 90°, thereby to cause the flutes of the corrugated layers of the sections in said rotatable hopper portion to extend parallel with the longitudinal axis of said first web.

4,126,509

PROCESS FOR PRODUCING PHOSOPHOROUS-DOPED SILICON MONOCRYSTALS HAVING A SELECT PERIPHERAL DOPANT CONCENTRATION ALONG A RADIAL CROSS-SECTION OF SUCH MONOCRYSTAL

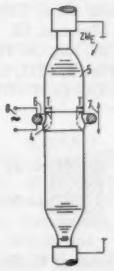
Wolfgang Keller; Herbert Kramer, both of Munich, and Konrad Reuschel, Vaterstetten, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 26, 1976, Ser. No. 735,583

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1975, 2551301; Nov. 14, 1975, 2551281

Int. Cl.[2] B01J *17/12, 17/40*

U.S. Cl. 156—605 **2 Claims**



1. A process for producing a phosphorous-doped silicon monocrystal having a radially peripheral dopant concentration lower than the dopant concentration at the center of such monocrystal, comprising:

providing a silicon monocrystalline rod having a substantially homogeneous phosphorous doping throughout such rod by controllably irradiating said rod with thermal neutrons so that the reactions:

$Si^{30}(n, \gamma)\, Si^{31} \xrightarrow{\beta^-} p^{31}$

occurs within said rod and yields a homogeneous phosphorous doped silicon monocrystalline rod;

subjecting said homogeneously phosphorous doped rod to at least one peripheral zone melt cycle in a select atmosphere in such a manner that a melt zone is generated about said rod so as to have a depth which ranges between about 1/10 to ½ the radius of said rod and said melt zone is drawn at least once through said rod; and

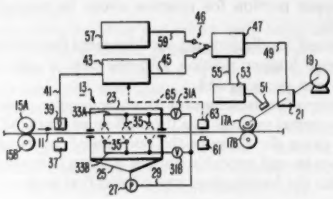
adjusting the draw rate of said peripheral melt zone through said rod so as to range from about 0.5 mm/min to about 8 mm/min to attain the desired peripheral dopant concentration in said rod.

4,126,510

ETCHING A SUCCESSION OF ARTICLES FROM A STRIP OF SHEET METAL

John J. Moscony, and George S. Gadbois, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 6, 1977, Ser. No. 840,037
Int. Cl.² C23F *1/02*
U.S. Cl. 156—626 **9 Claims**



1. In a method for producing a succession of articles from a strip of sheet metal whose thickness varies randomly along its length including (i) moving said strip along a prescribed path, (ii) and etching through said strip in defined regions thereof to a desired degree, said etching step having at least one variable process parameter that affects said degree of etching, the improvement comprising

(a) monitoring the thickness of said strip along its direction of movement,

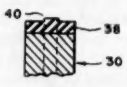
(b) and adjusting said variable process parameter in response to said monitored thickness.

4,126,511

COATING SELECTED AREAS OF A SUBSTRATE

Donald T. Ford, Mountain View, Calif., assignor to Arnold Engineering Company, Marengo, Ill.

Division of Ser. No. 718,738, Aug. 30, 1976, Pat. No. 4,059,069. This application Nov. 9, 1977, Ser. No. 849,824
Int. Cl.² C23F *1/04*
U.S. Cl. 156—660 **3 Claims**



1. The method of depositing a coating material on preselected areas of an elongated strip having registration holes along at least one longitudinal side thereof which comprises depositing said coating material on the surface of one side of said strip including said preselected areas, using a rotogravure roll to apply ink to an applicator roll having a peripheral groove to just receive said strip and having pin elements to register with said holes, operatively associating said strip and holes with said groove and pins for depositing ink only on said coating material on said preselected areas, curing said ink on said preselected areas, then removing said coating material not covered by the ink, and then removing said ink from the coating material on said preselected areas.

4,126,512

PERLITIC INSULATING BOARD

John A. Hill, Branchburg, N.J., assignor to Johns-Manville Corporation, Denver, Colo.

Continuation of Ser. No. 78,204, Oct. 5, 1970, abandoned, which is a continuation of Ser. No. 826,086, May 15, 1969, abandoned, which is a continuation of Ser. No. 515,649, Dec. 22, 1965, abandoned. This application Nov. 26, 1973, Ser. No. 419,023
Int. Cl.² D21D *3/00*
U.S. Cl. 162—171 **3 Claims**

1. In a thermal insulating board product suitable for use as a roof insulating board and having a density in the approximate range of 9–12 pounds per cubic foot, consisting essentially of the following ingredients dispersed throughout the material in proportionate amounts, by weight, of the total amount of solids in the finished material, within the following approximate percentage ranges:

(a) expanded perlite - 65% – 75%,

(b) fibers - 15% – 25%, and

(c) bituminous material - 3% – 10%, the improvement comprising

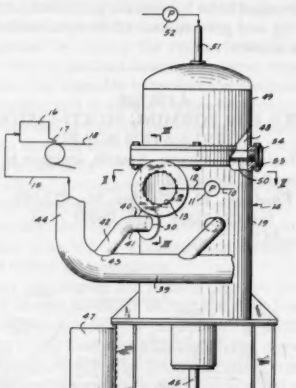
(d) approximately 0.3% – 2% by weight of the total solids in the finished material of starch present in the board product and dispersed throughout the material.

4,126,513

AIR DOME ATTENUATOR

Edgar J. Justus, Beloit, Wis., and Carl B. Dahl, Rockton, Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Jun. 30, 1977, Ser. No. 811,959
Int. Cl.² B07B *1/20*; D21F *1/00*
U.S. Cl. 162—380 **12 Claims**



1. A paper making machine screen for processing stock flowing to a headbox comprising in combination:

a housing defining a screening chamber therein having an inlet for receiving the stock;

a cylindrical screen within the chamber for passing stock to the outer wall of the chamber;

a foil means having one or more foils mounted for rotating at a uniform speed of travel along said screen for generating pulsations in the stock passing through the screen;

a foil drive for moving the foil means along the screen;

a plurality of outlets arranged circumferentially around the

outer wall of the housing receiving stock after it has passed through the screen;

and a manifold for leading to a headbox having said outlets connected thereto and structurally positioned relative to the number and position of foils so that the pulsations of the foil means tend to be self-cancelling in the manifold.

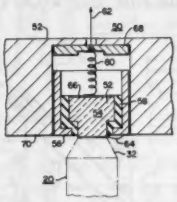
5. A paper making machine screen for processing stock flowing to a headbox constructed in accordance with claim 1: including a fan pump connected to deliver stock to the screen and a connection leading from the manifold to a headbox of a paper machine.

4,126,514

METHOD FOR DETECTING AND LOCATING DEFECTIVE NUCLEAR REACTOR FUEL ELEMENTS

James W. Wonn, Irwin, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 513,914, Oct. 10, 1974, abandoned. This application Feb. 11, 1976, Ser. No. 656,991
Claims priority, application France, Sep. 10, 1975, 75 30943
Int. Cl.[2] G21C *17/00*
U.S. Cl. 176—19 LD **9 Claims**



1. A method for detecting and locating a defective nuclear reactor fuel element normally maintained within an assembly having an ordered array of a plurality of spaced fuel elements respectively comprising fissile material enclosed within an acoustically conductive tubular cladding hermetically sealed at either end with the space between fuel elements defining fluid flow channels for the passage of a cooling liquid among the elements of the array, including the steps of:

generating an acoustic signal exterior of the cladding;

propagating the acoustic signal along the fuel element cladding;

monitoring reflections of the propagated signal occurring at a preestablished given location along the axial length of the cladding; and

correlating the attenuation of the monitored signal over the amplitude of the generated signal to a preestablished standard corresponding to a level of attenuation indicative of the presence of the cooling liquid within the element.

4,126,515

NUCLEAR REACTOR CAVITY STREAMING SHIELD

Robert J. Klotz, Simsbury, and Donald W. Stephen, West Suffield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

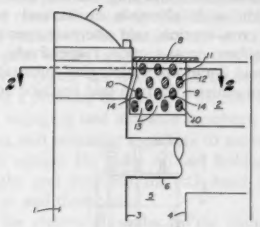
Filed Apr. 29, 1977, Ser. No. 792,164
Int. Cl.[2] G21C *13/00*
U.S. Cl. 176—87 **9 Claims**

1. A radiation shield for a nuclear reactor vessel, including,

a reactor pressure vessel in the form of a vertical cyclinder,

a concrete reactor cavity structure spaced about the external wall of the pressure vessel,

a series of rings of hydrogeneous material spaced from each other and mounted in the annulus between the vessel and reactor cavity structure to avoid any upward and straight and vertical line of sight in the annulus from below the rings,



whereby radiation streaming up the annulus from below the rings will be attenuated while a loss of coolant accident will result in a minimal pressure buildup in the annulus.

4,126,516

METHOD FOR DISTINGUISHING GRAM POSITIVE AND GRAM NEGATIVE MICROBES

Ralph A. Messing, Horseheads, and William S. Ramsey, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 29, 1976, Ser. No. 745,655
Int. Cl.[2] C12K *1/06*
U.S. Cl. 195—103.5 R **22 Claims**

1. A method of determining the gram staining properties of a microbe, the method comprising the steps of:

(a) incubating a sample of the microbe on a microbial culture medium having incorporated therein a lipophilic fluorescent material in an amount sufficient to permit the fluorometric detection of microbial growth;

(b) determining the quantity of fluorescence of the incubated microbe; and

(c) comparing the quantity of fluorescence of the incubated microbial sample with the quantity of fluorescence of similarly incubated microbe known to be a gram positive or a gram negative microbe.

11. A method of determining whether the lipid content of the cell wall of a given microbe is above or below the lipid content of the cell wall of a microbe used as a reference, the method comprising the steps of:

(a) incubating the given microbe on a microbial growth medium having incorporated therein a lipophilic fluorescent material in an amount sufficient to permit the fluorometric detection of microbial growth;

(b) determining the quantity of fluorescence of the incubated microbe; and

(c) comparing the quantity of fluorescence of step (b) with the quantity of fluorescence emitted by the reference microbe when incubated according to step (a).

4,126,517

METHOD OF CONVERTING LIQUID MICRO-BIOLOGICAL SUBSTRATE AND APPARATUS FOR CARRYING OUT THE METHOD

Peter Bayer, Monthey, Switzerland, assignor to Giovanola Freres SA, Monthey, Switzerland

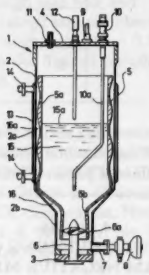
Filed Sep. 12, 1975, Ser. No. 612,847
Claims priority, application Switzerland, Sep. 19, 1974, 12706/74
Int. Cl.[2] C12B *1/14*
U.S. Cl. 195—109 **13 Claims**

1. In a fermentation process wherein liquid microbiological substrate containing microorganisms is recirculated at a constant velocity through a reaction zone to promote the growth of said microorganisms and thereafter at a constant but lower velocity through a post reaction zone to effect release of gases

contained in the liquid, the improvement comprising the steps of:

a. providing a reaction zone in the form of a duct including at least one liquid contacting surface having a sinuous configuration with alternate crests and valleys when viewed in cross-section, said alternate crests and valleys being of uniform cross-section, respectively;

b. directing said liquid microbiological substrate containing said microorganisms through said reaction zone and over



said sinuous configured surface and alternately increasing and decreasing the velocity of said liquid as it passes over said crests and valleys of said sinuous surface, respectively; and

c. simultaneously effecting a series of pressure fluctuations in said liquid as said liquid passes over the sinuous configured surface in said reaction zone, said pressure fluctuations and corresponding velocity changes imparted to said liquid being instrumental in promoting a favorable growth of microorganisms.

4,126,518

METHOD AND INCLINED CHAMBER FURNACE FOR CARBONIZING FLUENT CARBON-CONTAINING MATERIAL

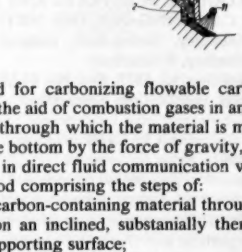
Julio C. S. da Silva Bento, Linda-a-Velha, Portugal, assignor to Etablissement Capitrop, Vaduz, Liechtenstein

Filed Aug. 5, 1977, Ser. No. 822,318

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1976, 2637564

Int. Cl.[2] **C10B** *11/00, 49/06, 57/10*

U.S. Cl. 201—27 **9 Claims**



1. A method for carbonizing flowable carbon-containing materials with the aid of combustion gases in an inclined treatment chamber through which the material is moved from the top towards the bottom by the force of gravity, said treatment chamber being in direct fluid communication with an exhaust flue, said method comprising the steps of:

flowing the carbon-containing material through the inclined chamber on an inclined, substanially thermally-nonconductive supporting surface;

controllably introducing air into the treatment chamber from a single inlet disposed at the bottom portion of the chamber;

generating the heat needed for carbonizing the material exclusively within the treatment chamber by combustion of the distillation gases from the material and the air introduced through said inlet;

continuously supplying air into the exhaust flue through a second inlet disposed at the lower portion of the flue, to induce burning within the flue of combustible material in the gases passing through the flue; and

passing the heat-generating mixture of distillation gas and air exclusively through the treatment chamber, countercurrent to the flow of the material and in direct contact with the material, said countercurrent flow achieved by the natural lift of the burning mixture and the draft created by the additional burning of combustible materials in the flue.

4,126,519

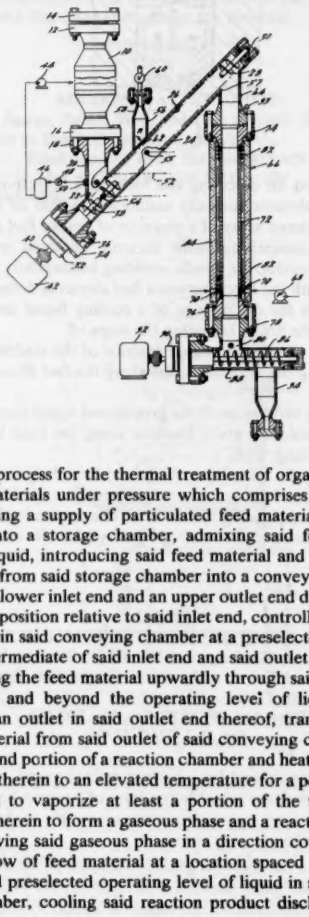
APPARATUS AND METHOD FOR THERMAL TREATMENT OF ORGANIC CARBONACEOUS MATERIAL

Robert G. Murray, Palo Alto, Calif., assignor to Edward Koppelman, Encino, Calif.

Filed Sep. 12, 1977, Ser. No. 832,363

Int. Cl.[2] **C10B** *1/08, 7/10, 47/20;* **C10L** *5/00*

U.S. Cl. 201—32 **22 Claims**



20. A process for the thermal treatment of organic carbonaceous materials under pressure which comprises the steps of introducing a supply of particulated feed material to be processed into a storage chamber, admixing said feed material with a liquid, introducing said feed material and liquid under pressure from said storage chamber into a conveying chamber having a lower inlet end and an upper outlet end disposed at an elevated position relative to said inlet end, controlling the level of liquid in said conveying chamber at a preselected operating level intermediate of said inlet end and said outlet end thereof, conveying the feed material upwardly through said conveying chamber and beyond the operating level of liquid therein toward an outlet in said outlet end thereof, transferring the feed material from said outlet of said conveying chamber into an inlet end portion of a reaction chamber and heating said feed material therein to an elevated temperature for a period of time sufficient to vaporize at least a portion of the volatile substances therein to form a gaseous phase and a reaction product, withdrawing said gaseous phase in a direction countercurrent to the flow of feed material at a location spaced downstream from said preselected operating level of liquid in said conveying chamber, cooling said reaction product discharged from

said reaction chamber, and recovering the cooled said reaction product.

4,126,520

LIFT-OFF DEVICE FOR OVEN CHAMBER DOORS OF A COKE OVEN

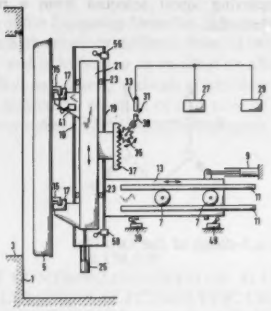
Lothar Hörster, Solingen, Fed. Rep. of Germany, assignor to Hartung, Kuhn & Co Maschinenfabrik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,036

Claims priority, application Fed. Rep. of Germany, May 6, 1977, 2720469

Int. Cl.[2] C10B *25/14*

U.S. Cl. 202—248 **6 Claims**



1. A lift-off system for the doors of oven chambers of a horizontal chamber coke oven having handles that can be raised and lowered between a bottom and a top terminal position and can be moved, in an intermediate engagement position, in the direction of the longitudinal axis of the oven chambers comprising door positioning means for opening and closing a door and for raising and lowering same into and out of a cleaning position, first and second counters coupled to a pulse generator constructed and arranged to generate pulses as a function of the raising movement of the door, first switch means responsive to the movement of the door, said first counter responsive to the movement of said switch to control the raising of the door by counting the number of pulses which can be preselected and corresponds to a constant preliminary raising movement of the door handles, second switch means located above said door, said second counter being constructed as a forward-backward counter, which counts the pulses between the upper position of the preliminary raising movement and a cleaning position, located above it and determined by said second switch means, said counter counting forwards or backwards depending on the direction of movement of the door handles, and limiting the lowering movement of the door from the cleaning position into the upper position of the preliminary raising movement.

4,126,521

METHOD OF COATING METAL SURFACES

Harry S. Coffin, King of Prussia, Pa., assignor to Computer Peripherals, Inc., Rochester, Mich.

Filed Oct. 19, 1977, Ser. No. 843,385

Int. Cl.[2] C25D *5/02, 17/06*

U.S. Cl. 204—15 **4 Claims**

1. A method for forming a metal coating on the head portion of a magnetic transducer comprising the steps of

a. mounting an electrical conductor within a holder formed of a non-porous, non-conducting elastic material;

b. mounting a magnetic transducer within the holder with the non-head portion of the transducer in contact with the electrical conductor and the holder while exposing only the head portion of the transducer;

c. mounting the holder in a support member having movable members engaging the sides of the holder;

d. mounting a plurality of actuating members in the support member engaging said movable members;

e. operating said actuating members to move said movable members against the sides of said holder to provide a liquid-tight seal between the non-head portion of the transducer and the holder;

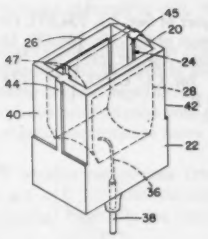
f. making the electrical conductor the cathode in a chromium bath having an anode;

g. passing current between the electrical conductor and the anode;

h. and removing the transducers from the holder.

4. A method for forming a chromium coating on the head portion of a magnetic transducer comprising the steps of

a. moulding an electrical conductor to the inside walls of the cavity portion of a boot type carrier formed of a non-porous, non-conductive elastic material;



b. positioning a magnetic transducer within the cavity portion of the carrier in contact with the electrical conductor wherein the cavity portion of the carrier covers the body portion of the magnetic transducer while exposing only the head portion of the transducer;

c. mounting the carrier in a support member having movable wall members each engaging a side wall of the carrier;

d. mounting a plurality of actuating mambers in the support member engaging the movable wall members adjacent the top edge of the carrier surrounding the head portion of the magnetic transducer;

e. operating said actuating members to move said movable wall members against the sides of the magnetic transducer compressing the sides of the carrier against the sides of the magnetic transducer to provide a liquid-tight seal between the top edge of the carrier and the magnetic transducer adjacent the head portion of the transducer;

f. mounting a plurality of actuating members in the support member engaging said movable member;

g. making the electrical conductor the cathod in a chromium bath having an anode;

h. passing current between the electrical conductor and the anode;

i. disabling the actuating members from engagement with the movable wall member;

j. and removing the transducer from the carrier.

4,126,522
METHOD OF PREPARING ALUMINUM WIRE FOR ELECTRICAL CONDUCTORS

Per-Olof G. Edlund, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 712,670, Aug. 9, 1976, abandoned, which is a continuation of Ser. No. 639,990, Dec. 11, 1975, abandoned, which is a continuation of Ser. No. 448,980, Jul. 16, 1974, Pat. No. 3,901,670, which is a continuation of Ser. No. 294,793, Oct. 4, 1972, abandoned. This application Jan. 13, 1977, Ser. No. 759,247

Int. Cl.[2] C25D *5/44, 7/06;* C23G *1/12*

U.S. Cl. 204—28 7 Claims

1. The method of preparing an aluminum wire for subsequent nickel plating for electrical conductors comprising passing the wire through an acid bath consisting of an aqueous solution containing 20 –35% by volume of 35% hydrochloric acid and 5 –13% by volume of 85% phosphoric acid, said bath having a temperature of between 50° and 70° C.

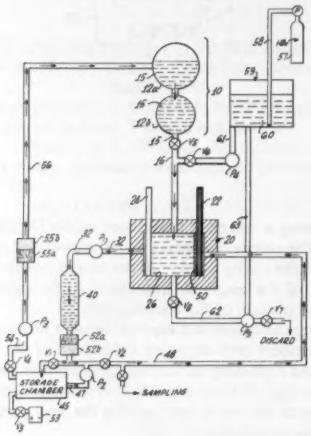
4,126,523
METHOD AND MEANS FOR ELECTROLYTIC PRECLEANING OF SUBSTRATES AND THE ELECTRODEPOSITION OF ALUMINUM ON SAID SUBSTRATES

Jack Y. Wong, San Jose, Calif., assignor to Alumatec, Inc., Lompoc, Calif.

Continuation-in-part of Ser. No. 734,677, Oct. 21, 1976, and a continuation-in-part of Ser. No. 734,679, Oct. 21, 1976. This application Apr. 29, 1977, Ser. No. 792,315

Int. Cl.[2] C25D *3/44, 5/34*

U.S. Cl. 204—32 R 14 Claims



1. An anhydrous etch solution, which consists essentially of:

an organic solvent selected from the group consisting of benzene, toluene, carbon disulfide, cyclohexane, dimethyl sulfide, tetrahydrofuran, diiodoethane, toluenecyclohexane (1:1), benzene-cyclohexane (1:1), tetrahydrofuran (THF): benzene (4:1) and toluene-CS_2 (3:1);

an aluminum halide present in said solution in an amount such that the aluminum cation concentration of said solution lies above about 2.0 molar but below about 3.5 molar; and

a hydrogen halide present in said solution in an amount such that the $[H^+]$ concentration of said solution lies above about 1.0 molar but below the hydrogen halide saturation point of said solution.

4,126,524
SILVER COMPLEX, METHOD OF MAKING SAID COMPLEX AND METHOD AND ELECTROLYTE CONTAINING SAID COMPLEX FOR ELECTROPLATING SILVER AND SILVER ALLOYS

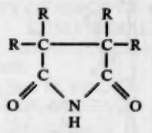
Edward Hradil; Hana Hradil, both of Warwick, and Alfred M. Weisberg, Providence, all of R.I., assignors to Technic, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 557,768, Mar. 12, 1975, abandoned. This application Mar. 1, 1976, Ser. No. 662,511

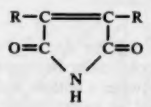
Int. Cl.[2] C25D *3/46, 3/64;* C07D *207/32, 207/44*

U.S. Cl. 204—44 41 Claims

2. In an aqueous electrolytic solution having a pH of 6 to 14, and free of cyanide, for use in electrodeposition of silver and silver alloys, the improvement that comprises a water-soluble silver complex formed from the reaction of a silver salt and an organic complexing agent selected from a pyrrolidine-2,5 dione of the formula:



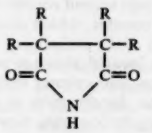
or



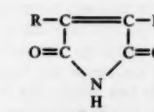
a 3-pyrroline-2,5-dione of the formula:

wherein R is, in each instance of its occurrence in each of the foregoing formulae, the same or different from its other instances of occurrence, and is hydrogen or an alkyl or alkoxy moiety, said alkyl or alkoxy moiety containing from 1 to 4 carbon atoms.

36. The process that comprises reacting one mole of a silver salt with at least two moles of a pyrrolidine-2,5-dione of the formula:



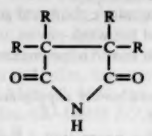
or



a 3-pyrroline-2,5-dione of the formula:

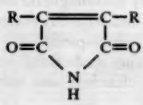
where, in each of the foregoing formulae, R is, in each instance of its occurrence, the same or different from its other instances of occurrence, and is hydrogen or an alkyl or alkoxy radical; each of said alkyl and alkoxy radicals containing from 1 to 4 carbon atoms.

39. A complex of silver and, as a complexing agent, a pyrrolidine-2,5-dione of the formula:



or

a —pyrroline-2,5-dione of the formula:



where, in each of the foregoing formulae, R is, in each instance of its occurrence, the same or different from its other instances of occurrence, and is hydrogen or an alkyl or alkoxy radical; each of said alkyl and alkoxy radicals containing from 1 to 4 carbon atoms; formed by reaction of one mole of a silver salt with at least two moles of said complexing agent.

4,126,525

METHOD OF CONTROLLING FEED OF ALUMINA TO AN ALUMINUM ELECTROLYTIC CELL

Kiyoaki Wakaizumi; Toshiki Matsunaga, and Yuji Mino, all of Kagawa, Japan, assignors to Mitsubishi Keikinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1977, Ser. No. 829,979

Claims priority, application Japan, Jun. 22, 1977, 52/74226

Int. Cl.[2] C25C *3/06, 3/00*

U.S. Cl. 204—67 **6 Claims**

1. A method of controlling feed of alumina to an aluminum electrolytic cell in which the alumina is electrolyzed to prepare aluminum, said method comprising the steps of

(a) commencing feed of alumina at a predetermined excess feed rate higher than the normal rate of consumption of alumina by electrolysis in said cell when the occurrence of an anode effect is detected or anticipated, and continuing feeding at said excess feed rate for a time t_1 calculated to correspond to the time necessary for the alumina concentration in said cell to reach a predetermined desirable level, wherein said time t_1 is calculated based on the measured alumina concentration when said feeding is commenced, said excess feed rate, and said normal rate of consumption of alumina;

(b) switching the alumina feed rate when said time t_1 has elapsed to a predetermined normal feed rate which is substantially equal to said normal rate of consumption of alumina, and continuing feeding at said normal feed rate for not longer than a time t_2 calculated to correspond substantially to the maximum time said feeding at said normal feed rate may continue before the alumina concentration reaches a predetermined maximum permissible concentration limit necessary to prevent formation of sludge, wherein said time t_2 is calculated based on said measured alumina concentration when said feeding is commenced in step (a), said predetermined excess feed rate, said normal feed rate, and the maximum positive feed error;

(c) interrupting the feed of alumina before or when said time t_2 has elapsed, thereby causing an anode effect to occur or to be anticipated; and

(d) maintaining said cell in operation by repetition of the cycle comprising said steps (a), (b) and (c).

4,126,526

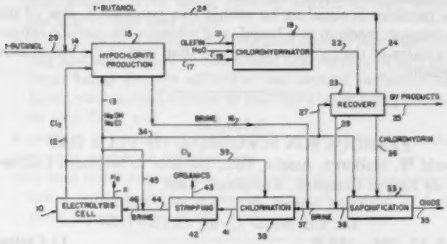
CYCLIC PROCESS FOR PRODUCTION OF ALKYLENE OXIDE USING ELECTROLYSIS OF BRINE

Joon T. Kwon, Freehold Township, Monmouth County, and Abraham P. Gelbein, Plainfield, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Nov. 16, 1977, Ser. No. 851,853

Int. Cl.[2] C25B *1/34;* **C07D** *301/00;* **C07C** *29/00, 31/34*

U.S. Cl. 204—98 **12 Claims**



1. In a process integrating an electrolytic process for the production of chlorine with a chlorohydrin process for producing an epoxy compound wherein a chlorohydrin is converted to a corresponding epoxy compound by contact with an aqueous solution of sodium chloride and sodium hydroxide from a chlorine producing electrolytic cell, the improvement comprising:

recovering an expoxy compound and an aqueous brine solution from the chlorohydrin conversion, said aqueous brine solution containing organic impurities;

contacting said aqueous brine solution with gaseous chlorine to oxidize the organic impurities to move volatile organic compounds;

stripping volatile organic compounds from the aqueous brine solution; and

introducing the aqueous brine solution into the electrolytic cell.

4,126,527

RADIATION CURABLE COATINGS CONTAINING HYDROXY FUNCTIONAL POLYETHERS AND POLYESTERS OF MONOETHYLENIC ACIDS OR HYDROXY ESTERS THEREOF

Marvin L. Kaufman, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 618,101, Sep. 30, 1975, abandoned. This application Dec. 2, 1977, Ser. No. 856,692

Int. Cl.[2] C08F *2/46*

U.S. Cl. 204—159.22 **11 Claims**

1. A radiation curable coating composition comprising a monoethylenic adduct of a monoethylenic carboxylic acid or hydroxy alkyl ester thereof with an anhydride containing at least 3 carbon atoms and selected from the group consisting of monoepoxides, lactones, and mixtures thereof, said adduct containing an average of at least 1 mole of said anhydride per mole of said hydroxy ester or an average of at least 2 moles of said anhydride per mole of said acid, said monoethylenic adduct being in admixture with a polyacrylate providing a plurality of ethylenically unsaturated acrylic acid ester groups.

4,126,528

ELECTROPHORETIC COMPOSITION AND DISPLAY DEVICE

Anne Chiang, Santa Clara, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 26, 1977, Ser. No. 819,076
Int. Cl.[2] C25D *1/12;* **G03G** *13/00*
U.S. Cl. 204—180 R **8 Claims**

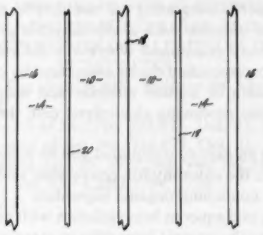
1. An electrophoretic display composition, comprising, electrophoretically-active hollow-core particles in a liquid or liquefiable suspension medium, wherein the weight density of the particles is equal to, or within five percent of, that of the suspension medium as a liquid, and wherein the surface refractive index of the particles is greater than that of the suspension medium.

4,126,529

FERROUS ION SCRUBBING OF FLUE GAS

David W. DeBerry, Austin, Tex., assignor to Southern California Edison Company, Rosemead, Calif.

Filed Aug. 5, 1977, Ser. No. 822,212
Int. Cl.[2] B01D *13/02;* **C01B** *17/00*
U.S. Cl. 204—180 P **13 Claims**



1. A method for regenerating a spent gas scrubbing solution to remove ferric chelates and sulfate ions therefrom comprising the steps of:

introducing said solution into the cathode compartment of an electrochemical cell, said cell having an anode compartment separated from said cathode compartment by an ion transfer membrane;

circulating water through said anode compartment;

passing a current from said cathode compartment to said anode compartment to cause the reduction of the ferric chelates to ferrous chelates and the oxidation of water in the anode compartment to form hydrogen ion, said current causing the transportation of sulfate ions in said cathode compartment through said ion transfer membrane into said anode compartment, said sulfate ions reacting with said hydrogen ions to form sulfuric acid.

4,126,530

METHOD AND APPARATUS FOR SPUTTER CLEANING AND BIAS SPUTTERING

John A. Thornton, Los Angeles, Calif., assignor to Telic Corporation, Santa Monica, Calif.

Filed Aug. 4, 1977, Ser. No. 821,698
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—192 EC **27 Claims**

1. Apparatus for sputtering material from surfaces of work-pieces in a gaseous environment, said apparatus comprising:

a housing for the gaseous environment;

a generally cylindrical cathode assembly, including means for supporting a plurality of work-pieces thereon such that the surfaces of the work-pieces when mounted on said cathode assembly, present sputtering surfaces which form discontinuities in and departures from a perfectly cylindrical cathode surface, said cathode assembly being coupled to a power supply and including portions which define a trap region for electrons in proximity to the work-pieces when supported in said cathode assembly, and said trap region forming a generally cylindrical sheath around said cathode assembly and the work-pieces, to promote ionization in the trap region and to improve the efficiency of the sputtering process;

anode means coupled to a power supply and located outside said trap region; and

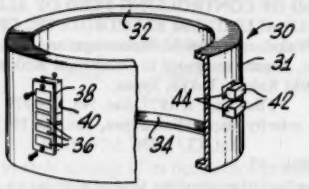
magnetic field means for generating a magnetic field with flux lines in close proximity to and substantially parallel with the surfaces of the work-pieces, whereby said trap region is formed by said magnetic field and by surfaces at cathode potential, and whereby material can be efficiently sputtered from the work-pieces.

18. A cathode sputtering method for processing work-pieces which require sputter cleaning, said method comprising the steps of:

supporting a plurality of work-pieces in a cathode assembly having a generally cylindrical shape and having means conducive to the formation of a plasma trap region adjacent to the work-piece surfaces, the surfaces of said work-pieces to be sputtered forming discontinuities in and departures from a perfectly cylindrical cathode surface;

applying a negative voltage to the cathode assembly with respect to an anode located just outside the plasma trap region;

exposing the cathode assembly and anode to a low pressure gaseous environment;



generating a magnetic field having flux lines closely adjacent and parallel to the surfaces of the work-pieces to be processed; and

sputtering material from the work-piece surface;

whereby the plasma trap region, defined by the magnetic field and surfaces of the cathode assembly, confines electrons to the region, maximizes the rate of ionization of the gaseous environment, and results in highly efficient sputter cleaning of the work-pieces.

21. A method as set forth in claim **18**, and further including the steps of:

collecting material sputtered from the work-pieces on a sputtering shield located to intercept the sputtered material;

subsequently removing the shield from its operative position by effecting relative movement between the shield and the cathode assembly;

as a result of said removing step, placing the cathode assembly in an operative relationship with a second cathode of coating material;

disconnecting the negative voltage previously applied to the cathode assembly;

then applying a negative voltage to the second cathode;

generating a magnetic field to establish a plasma trap adjacent the second cathode; and

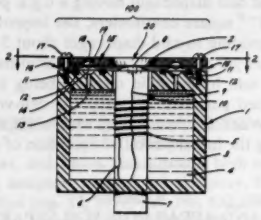
coating the work-pieces with material sputtered from the second cathode;

whereby a sputter cleaning step can be immediately followed by a sputter coating step.

4,126,531
SENSOR WITH ANNULAR PRESSURE COMPENSATING MEANS

Joe A. Porter, Whittier, and Allen F. Dageforde, Orange, both of Calif., assignors to Uniloc, Inc., Irvine, Calif.

Filed Mar. 20, 1978, Ser. No. 888,115
Int. Cl.[2] G01N *27/30, 27/46*
U.S. Cl. 204—195 P **21 Claims**



1. A cell for electrochemical analysis of a constituent in a sample comprising

(i) an electrically non-conductive body having an electrolytic reservoir therein,

(ii) a pair of spaced electrodes positioned in said reservoir and adapted to be joined by an electrolyte in said reservoir,

(iii) an opening communicating between said reservoir and the exterior of said body,

(iv) a thin flexible polymeric membrane permeable to said constituent and impermeable to the electrolyte, and

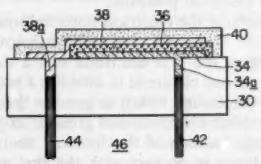
(v) mounting means maintaining said membrane under tension over one electrode which is disposed in said opening and in a position to close said opening,

the improvement comprising at least one body passage disposed in said body and communicating between said reservoir and the exterior of said body, the mounting means having an opening corresponding to the opening in said body and at least one passage corresponding in configuration and dimension with said body passage and communicating with said body passage, and a membrane being compressed by said mounting means between the exterior of said body and the interior side of said mounting means so as to provide a flexible, substantially non-tensioned separation between the exterior of said mounting means and said reservoir.

4,126,532
OXYGEN SENSOR

Hiroshi Takao, Kamakura, and Kazuo Matoba, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 21, 1977, Ser. No. 835,230
Claims priority, application Japan, Sep. 22, 1976, 51-114304
Int. Cl.[2] G01N *27/58*
U.S. Cl. 204—195 S **6 Claims**



1. An oxygen sensor for determining the oxygen content in a fluid, comprising:

a non-conductive base member having thereon a substantially flat surface and having spaced first and second holes passing therethrough which extend from said flat surface;

a first layer of solid material providing a reference source of oxygen and having first and second surfaces, said first surface of said first layer being directly affixed to said flat surface of said base member and covering said first hole, with a portion of said first layer being received in said first hole;

a second layer of a solid electrolyte covering said first layer and having first and second surfaces, said first surface of said second layer being directly affixed to said second surface of said first layer;

a third layer of a metal covering said second layer and having first and second surfaces, said first surface of said third layer being directly affixed to said second surface of said layer, said second surface of said third layer being exposed to said fluid, and

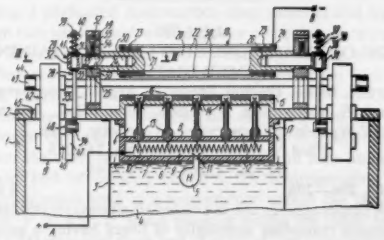
a portion of said third layer being received in said second hole in said base member; and

two lead wires respectively received in said first and second holes and connected with the portions of said first and third layers, respectively received in said holes.

4,126,533
APPARATUS FOR SELECTIVE ELECTROPLATING OF WORKPIECES

Viktor E. Lukyanchikov, Sakhalinskaya ulitsa, 4, kv. 142; Ilya V. Baidalinov, 2 ulitsa Mariinoi roschi, 14a, kv. 18, and Mikhail Y. Selivanov, Khersonskaya ulitsa 19, kv. 83, all of Moscow, U.S.S.R.

Filed Jul. 22, 1977, Ser. No. 818,087
Claims priority, application U.S.S.R., Jul. 28, 1976, 2387555
Int. Cl.[2] C25D *17/00, 17/06*
U.S. Cl. 204—224 R **7 Claims**



1. An apparatus for selective local electroplating of workpieces comprising:

a plating solution feed system;

a plating unit having an enclosed cavity communicating with said plating solution feed system, a top wall of the plating unit having passages for plating solution to pass through towards said workpieces;

a masking means mounted on said top wall of said plating unit to mask workpiece surface areas not to be plated;

pressing means in the form of a magazine with at least two pressure surfaces, each pressure surface having sealing gaskets;

workpiece orientation members mounted on each one of said magazine pressure surfaces;

means for fixing workpieces in the oriented position mounted on each one of said magazine pressure surfaces;

a vertical movement actuator operatively connected to said pressing means in a manner which provides for rotation of said magazine about a horizontal axis extending substantially between said pressure surfaces, so that when one of said pressure surfaces presses workpieces against said top wall of said plating unit, the other pressure surface is in a position which permits another lot of workpieces to be placed thereon or removed therefrom;

an anode mounted in the path of the flow of plating solution being fed towards said workpieces; and

a cathode connected to said workpieces in the process of plating.

4,126,534

MONOPOLAR ELECTROLYTIC CELL ELECTRODES

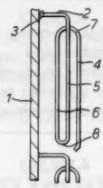
Thomas W. Boulton, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jul. 28, 1977, Ser. No. 819,962

Claims priority, application United Kingdom, Aug. 4, 1976, 32489/76

Int. Cl.[2] C25B *9/00, 11/02, 11/10*

U.S. Cl. 204—266 **32 Claims**



1. An electrode suitable for use in a monopolar electrolytic cell of the filter press type said electrode comprising a group of elongated metal members electrically conductively and mechanically independently mounted on and projecting from at least one surface of a metal sheet so that a portion of each of the members lies in a plane laterally spaced from and substantially parallel to the surface of the sheet, said members being flexible, and said group comprising a plurality of rows and a plurality of columns of said members.

4,126,535

CHLOROTRIFLUOROETHYLENE CONTAINING POLYMER DIAPHRAGM

Edward N. Balko, Trenton; Shyam D. Argade, Woodhaven, and James E. Shrewsburg, Southgate, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 18, 1976, Ser. No. 742,818

Int. Cl.[2] C25B *13/08, 1/46*

U.S. Cl. 204—296 **9 Claims**

1. A diaphragm for use in a chlor-alkali electrolysis cell, said diaphragm consisting essentially of fibers having a cross-sectional dimension of 0.3 to 5 microns, said fibers being composed of a fluorine-containing addition polymer selected from the group consisting of the homopolymers of chlorotrifluoroethylene and copolymers of chlorotrifluoroethylene with at least one compatible unsaturated C_2 to C_4 monomer, units of chlorotrifluoroethylene accounting for at least 80 percent of the monomeric units of said copolymer which exhibits the property of developing, while in service in the hostile environment of a chlor-alkali cell, a surface portion of composition different from that of the bulk of said fiber and effective after a period of use of approximately 2 weeks to increase substantially the burst strength and to prolong substantially the service life of said diaphragm in said cell.

4,126,536

DIAPHRAGMS FOR CHLOR-ALKALI CELLS

Edward N. Balko, Trenton; Shyam D. Argade, Woodhaven; James E. Shrewsburg, Southgate, and Douglas A. Porath, Dearborn Heights, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 27, 1976, Ser. No. 754,655

Int. Cl.[2] C25B *13/08, 1/34*

U.S. Cl. 204—296 **5 Claims**

1. In a diaphragm for use in a chlor-alkali cell, said diaphragm being composed of an entanglement of fibers of a fluorine-containing addition polymer selected from the group consisting of the homopolymers of chlorotrifluorethylene and copolymers of chlorotrifluoroethylene with at least one compatible unsaturated C_2 to C_4 monomer, units of chlorotrifluoroethylene accounting for at least 80 percent of the monomeric units of said copolymer which exhibits the property of generating a pair of surface plies of increases strength when subjected to cell-environment conditions for a period of about 2 weeks, said fibers being about 4 microns or less in one cross-sectional dimension, and said diaphragm having a c.g.s. permeability of 0.1 to 5×10^{-9} square centimeters, the improvement which consists in providing to said diaphragm about 5 to 80 percent by weight of a hydrophilic inorganic material stable in the cell environment, said hydrophilic material being in the form of sub-micron-sized particles, whereby the cell-voltage characteristics of the cell unit containing such a diaphragm are improved during the initial period of operation of such cell unit.

4,126,537

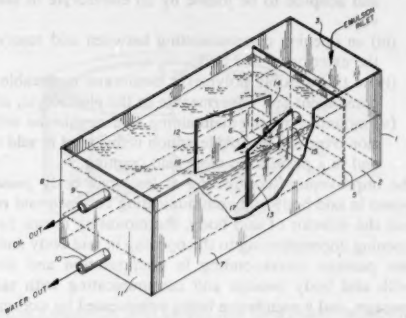
METHOD AND APPARATUS FOR SEPARATION OF FLUIDS WITH AN ELECTRIC FIELD

Floyd L. Prestridge, Tulsa, Okla., assignor to Combustion Engineering, Inc., Stamford, Conn.

Filed Jul. 15, 1977, Ser. No. 816,115

Int. Cl.[2] B01D *13/02;* **B03C** *5/00*

U.S. Cl. 204—302 **5 Claims**



1. An electric processor for mixtures of multiple fluids, including,

a metallic vessel formed as a fluid conduit,

a source of a mixture of multiple fluids connected to an inlet of the vessel to supply the mixture so it will flow through the vessel,

a first electrode mounted in the vessel at a position to initially contact the fluid mixture,

a second electrode mounted in the vessel downstream of the first electrode to provide an annulus with the internal walls of the vessel and providing a conical form with walls which increase in distance from the internal walls of the vessel in the downstream direction of flow of the fluid mixture,

a source of electrical potential,

means connecting the electrical potential source to the first and second electrodes in parallel to provide a positive charge upon the first electrode and a negative charge upon the second electrode to establish a potential between the two electrodes which is greater than the potential between either electrode and ground, to provide a positive charge for one of the fluids of the mixture as the mixture flows in contact with the first electrode and a negative charge for the conical electrode to provide a high initial gradient field for the mixture which decreases along the length of the conical electrode in the direction of flow through the vessel,

and separate outlet conduits connected to the downstream

end of the vessel through which fluids separated by the field are conducted separately from the vessel.

4,126,538

PROCESS FOR THE CONVERSION OF HYDROCARBONS

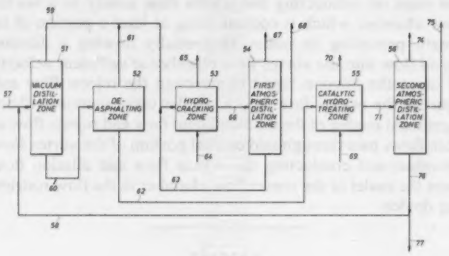
Frans Goudriaan, and Jakob Van Klinken, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 12, 1977, Ser. No. 832,250

Claims priority, application Netherlands, Sep. 22, 1976, 7610511

Int. Cl.[2] C10G *39/00, 13/06*

U.S. Cl. 208—80 **8 Claims**



1. A process for the production of at least one atmospheric hydrocarbon oil distillate from a hydrocarbon oil residue obtained by atmospheric distillation which comprises

(a) fractionating said residue by vacuum distillation into a vacuum distillate and a vacuum residue having an initial atmospheric boiling point above 500° C.,

(b) deasphalting said vacuum residue in a deasphalting zone by contact with a lower hydrocarbon sorbent to obtain a deasphalted oil which is passed to step (c) and asphalt, which is passed to step (e),

(c) cracking said vacuum distillate and said deasphalted oil in a cracking zone selected from a catalytic cracking zone and a hydrocracking zone to obtain a cracked product,

(d) fractionating said cracked product by fractionation distillation at essentially atmospheric pressure to obtain at least one light hydrocarbon distillate product, and residue, and recycling at least part of this cracked product as feed to the cracking zone,

(e) hydrotreating said asphalt in a catalytic hydrotreating zone under such conditions that more than 50% by weight of the feed is converted into material which does not precipitate in a deasphalting step under the same conditions used to prepare said asphalt feed, to obtain a hydrotreated asphalt product,

(f) fractionating said hydrotreated asphalt product by fractionation distillation at essentially atmospheric pressure to obtain at least one hydrotreated atmospheric distillate product and a hydrotreated atmospheric residue,

(g) fractionating said hydrotreated atmospheric residue from step (f) by vacuum distillation into a hydrotreated vacuum distillate and a hydrotreated vacuum residue and recycling at least part of this hydrotreated vacuum residue to the deasphalting zone of step (b).

4,126,539

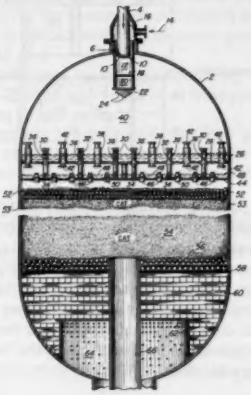
METHOD AND ARRANGEMENT OF APPARATUS FOR HYDROGENATING HYDROCARBONS

Walter R. Derr, Jr., Voorhees; Lawrence E. Gallagher, Titusville; James H. Haddad, Princeton Junction; Stephen J. McGovern, Bellmawr; Klaus W. Schatz, Wenonah, and Fritz A. Smith, Haddonfield, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,158

Int. Cl.[2] C10G *13/06;* B01F *3/04;* B01J *3/02*

U.S. Cl. 208—108 **9 Claims**



1. A method for catalytically converting under elevated temperatures and pressures a normally liquid hydrocarbon feed material in the presence of hydrogen which comprises,

passing a preheated hydrocarbon feed material and hydrogen rich gas through a mixing zone comprising a sequence of high liquid surface area producing mixing zones to effect substantial saturation of the hydrocarbon feed with the hydrogen rich gas,

discharging the hydrocarbon feed thus saturated with hydrogen rich gas from said mixing zone as a liquid spray over the cross-sectional area of a reaction zone housing a fixed bed of catalyst effective for hydrogenating said hydrocarbon feed at a temperature within the range of 450° F. to 850° F. and a pressure within the range of 400 to 2000 psig, said fixed bed of catalyst vertically separated from said liquid spray by a plurality of vertically spaced apart confined gas/liquid distributing downcomer zones in the cross-sectional area of said reaction zone, said downcomer zones distributed in a plane of said reaction zone cross-section and arranged to maintain a shallow level of liquid in said plane, said distributed liquid and hydrogen rich gas undergoing catalytic conversion reaction during downward traverse of said catalyst bed, and

recovering products of said catalytic reaction through a plurality of low pressure drop zones in open communication with a product withdrawal zone at the bottom of said reaction zone.

4,126,540

APPARATUS AND PROCESS FOR DISTRIBUTING A MIXED PHASE THROUGH SOLIDS

Martin P. Grosboll, Homewood; Robert R. Edison, Olympia Fields, and Thorpe Dresser, Markham, all of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation of Ser. No. 385,386, Aug. 3, 1973, abandoned. This application Jul. 22, 1977, Ser. No. 817,956

Int. Cl.[2] B01J *8/02;* C10G *11/10*

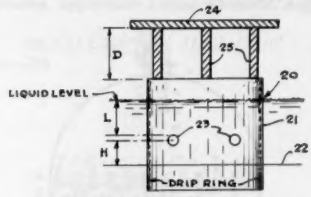
U.S. Cl. 208—146 **10 Claims**

1. An apparatus for distributing a generally downwardly

flowing liquid-vapor mixture through a bed of solid particles comprising:

(a) a tray deck located above said bed of solid particles;

(b) at least one hollow chimney member with a top opening in fluid communication with said bed of solid particles attached to said tray deck and extending upwardly from said tray deck, said chimney member having a plurality of apertures through said chimney member along the length of said chimney member not extending to the top opening



and below the top opening of said chimney member to provide fluid communication between the space about said tray deck and the hollow space of said chimney member, the center lines of said apertures being located at a substantially uniform distance above said tray deck; and

(c) plate means located at a distance D above the top opening of said chimney member whereby said mixture is restricted from flowing directly into the top opening of said chimney member.

4,126,541

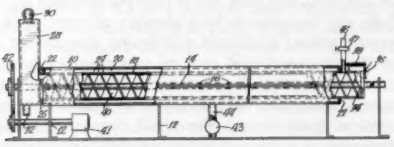
APPARATUS AND METHOD FOR REFINING ASBESTOS DISPERSIONS

John F. Orzechowski, Orange, Conn., assignor to Raybestos-Manhattan, Inc., Trumbull, Conn.

Filed Apr. 25, 1977, Ser. No. 790,185

Int. Cl.[2] B07B *1/20*

U.S. Cl. 209—240 **6 Claims**



1. Apparatus for removing contaminants from a slurry of colloidally dispersed asbestos fibers comprising: a horizontally disposed cylindrical jacket; a cylindrical perforate screen tube internally of said jacket and concentric therewith, the screen tube having an inlet end and an outlet end and being spaced from the jacket to form a chamber therebetween; a screw disposed for rotation within the screen tube, said screw extending to the extreme outlet end of said tube; means for feeding slurry into the screen tube; suction means associated with the chamber so that refined dispersion is drawn through the perforations from the screen tube into the chamber while the contaminants are retained in the screen tube; means for rotating the screw to compact the contaminants at the discharge end of the screen tube; and means responsive to pressure of the compacted contaminants for discharging said compacted contaminants from the discharge end of the screen tube in a direction axially thereof.

4,126,542

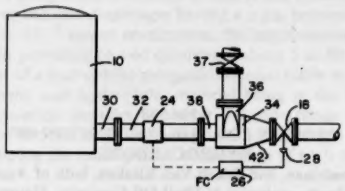
PRESSURE DROP DEVICE FOR FLUID SUSPENSIONS

Lawrence A. Carlsmith, Amherst, N.H., assignor to Canadian Ingersoll-Rand Company, Montreal, Canada

Filed Apr. 22, 1977, Ser. No. 789,922

Int. Cl.[2] B07B *1/46*

U.S. Cl. 209—258 **3 Claims**



1. A method of conducting a rejects flow from a pressure separator used to separate contaminants from the desired cellulose fibers in a wood pulp slurry to a flow restricting device used to lower the pressure at a controlled flow rate comprising the steps of: conducting the rejects flow axially to a vortex flow chamber which is conical along at least a portion of its length preceding its outlet, tangentially flowing a dilution liquid flow into the vortex flow chamber at sufficient velocity to cause the dilution liquid to surround the rejects flow and squeeze the rejects flow into a smaller cross section without significant mixing of the dilution liquid flow and rejects flow as both flows pass through said conical portion of the vortex flow chamber; and conducting the rejects flow and dilution flow from the outlet of the vortex flow chamber to the flow restricting device.

4,126,543

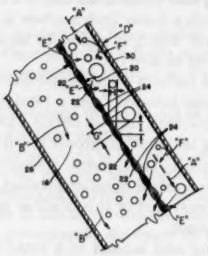
METHOD AND APPARATUS FOR SCREENING PARTICULATE MATERIALS

Arthur G. Clem, Des Plaines, Ill., assignor to American Colloid Company, Skokie, Ill.

Filed Feb. 14, 1977, Ser. No. 768,157

Int. Cl.[2] B07B *1/28*

U.S. Cl. 209—263 **5 Claims**



1. A screening apparatus for use in separating oversize from on-size particles in a mass of particulate material rapidly passed through said screening apparatus, said apparatus comprising:

a sloping screen mesh having openings therein for sizing said particles dimensioned to be larger than a predetermined maximum dimension for on-size particles intended to pass through said mesh;

means for supporting said screen mesh at a steep slope angle, the product of the cosine of said slope angle and the size of said mesh openings being substantially equal to said predetermined maximum dimension for on-size particles; and

an imperforate particle rebound shield spaced therefrom in

the approximate range of three-eighths to one-half inch above and substantially parallel of the upper surface of said screen mesh along the length thereof for directing particles bouncing off said screen mesh back toward said openings.

4,126,544

PROCESS AND APPARATUS FOR REMOVING IMPURITIES DISSOLVED IN WATER

Ulrich Baensch, Melle, and Luis-Alberto Benedetto-Castro, Schlitz-Hallenburg, both of Fed. Rep. of Germany, assignors to Tetra Werke, Dr. rer. nat. Ulrich Baensch G.m.b.H., Melle, Fed. Rep. of Germany

Filed Nov. 24, 1976, Ser. No. 744,826

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1975, 2553050

Int. Cl.[2] C02C *1/04*

U.S. Cl. 210—11 **15 Claims**

1. A process for treating water containing impurities including organic nitrogen compounds, nitrates or ammonium compounds, said process comprising the successive steps of:

(1) passing the water to be purified through a complete ammonification and nitrification system containing aerobic bacteria in the presence of ambient, oxygen-containing air;

(2) passing the water treated in step (1) downwardly through an oxygen removal system which countercurrently passes a stream of nitrogen through the treated water to physically remove all, or substantially all, of the oxygen dissolved in the treated water;

(3) downwardly passing the oxygen-free treated water of step (2) into a biologically active nitrate reduction system containing denitrifying anaerobic bacteria and a nitrogen atmosphere and thereby reducing the nitrate impurities present in the water;

(4) separating and removing gases generated during the impurity-removing steps; and thereafter

(5) recovering the thus purified water.

4,126,545

APPARATUS AND METHOD FOR TREATING WASTE-CONTAINING LIQUORS

Hiroshi Hagiwara, Moriyama, Japan, assignor to Research Corporation, New York, N.Y.

Filed Aug. 12, 1977, Ser. No. 824,255

Claims priority, application Japan, Aug. 24, 1976, 113063[U]

Int. Cl.[2] C02C *1/04*

U.S. Cl. 210—14 **10 Claims**

1. In an apparatus for treating waste-containing liquor comprising in combination:

a vessel;

means for introducing waste-containing liquor into said vessel;

a bacterial growth area within said vessel surrounded and submerged by said liquor;

means defining an open fluid passageway adjacent and through said bacterial growth area;

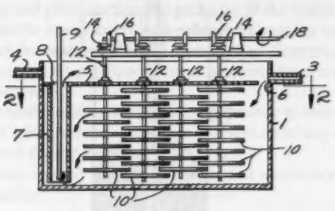
pumping means operatively associated with said passageway including means to provide a flow of oxygen-containing gas through said passageway,

said passageway having inlet means and outlet means spaced apart from each other within said vessel to provide in cooperation with said bacterial growth area a path within said vessel for the continuous circulation and recirculation of liquor in contact with said bacterial growth area within said vessel; and

second outlet means operatively connected to said path for withdrawal from said vessel of at least some of the liquor circulating in said path;

the improvement wherein said bacterial growth area includes a plurality of spaced-apart bacterial growth surfaces extending in a horizontal plane and mounted on a vertical, rotatable shaft;

a plurality of said shafts having said growth surfaces thereon in operative, rotatable cooperation with each other, said growth surfaces on a given shaft spaced in a manner to cooperate and at least partially overlap said growth surfaces on at least one adjacent shaft, each shaft and its set of bacterial growth surfaces is positioned adjacent its neighboring shaft such that when rotated the circumference of each set of bacterial growth areas overlaps the circumference of each set of bacterial growth areas of the neighboring shaft;



rotating means connected with said shafts for slowly rotating said shafts and growth surfaces,

said bacterial growth area thus defined by sets of horizontal, rotatable bacterial growth surfaces which are interleaved and separated from each other providing fluid passageways therebetween for circulation and recirculation of said liquor.

8. A method of treating waste-containing liquor comprising the steps of:

providing a first vessel with a completely submerged bacterial growth area therein having horizontally spaced entrance and discharge portions, said entrance portion located at one end of said bacterial growth area providing inlet for the introduction of liquor into the bacterial growth area and said discharge portion located at the opposite end of said bacterial growth area providing outlet for the discharge of liquor from said bacterial growth area and a separate open fluid passageway in communication with said bacterial growth area through said outlet portion;

providing a bacterial growth area in said vessel which includes a plurality of spaced-apart bacterial growth surfaces extending in a horizontal plane and mounted on a vertical, rotatable shaft, and providing a plurality of said shafts having bacterial growth surfaces thereon in operative rotation cooperating with each other at least partially overlapping said growth surfaces on at least one adjacent shaft;

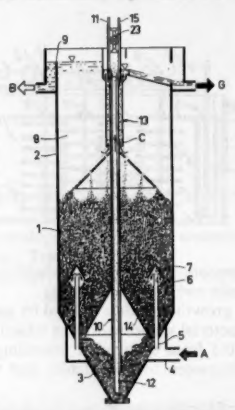
rotating said shafts and said bacterial growth surfaces mounted thereon;

introducing a waste-containing liquor into said vessel;
introducing an oxygen-containing gas into said passageway to provide a pumping action in said passageway whereby said gas and said liquor flow together in a single direction through said passageway;
continuously conducting substantially all of said liquor from said entrance portion to said discharge portion along an essentially horizontal path through said bacterial growth area;
passing said liquor over and around the horizontal, spaced-apart bacterial growth surfaces which are interleaved and separated from each other while said growth surfaces are rotating;
continuously circulating said liquor within said vessel and horizontally through said bacterial growth area and then through said passageway by means of said pumping action; and
continuously withdrawing a portion of said circulating liquor from said vessel.

4,126,546
METHOD FOR THE FILTRATION OF A SUSPENSION OR EMULSION

Ulf R. Hjelmnér, Nynäshamn, and Hans F. Larsson, Västerhaninge, both of Sweden, assignors to Rederiaktiebolaget Nordstjernan, Stockholm, Sweden

Filed Feb. 23, 1977, Ser. No. 771,138
Int. Cl.[2] B01D *23/24*
U.S. Cl. 210—19 **10 Claims**



1. In a method for filtering wherein a suspension or emulsion to be filtered is supplied to a zone of particle filter medium forming a filter bed, the suspension being filtered flows, during the filtration thereof, in an upward direction through the filter bed and is discharged from the filter bed as filtrated liquid phase, and wherein the filter medium during the filtration flows in a downward direction through the filter bed in counter-current to the suspension past the inflow of the suspension and thereafter is transported separated from the filter bed to a wash path for washing the dirty filter medium during flow along the wash path in counter-current to a wash liquid, whereupon the washed filter medium is returned to the filter bed zone to its top surface, the improvement wherein at least a part of the filtrated liquid phase which is discharged from the filter bed zone is maintained above this zone as a zone of filtrated liquid phase in direct contact with the filter bed zone, said separated transport of the dirty filter medium takes place upwards through the filter bed zone, and said counter-current washing of the dirty filter medium along the wash path takes place during flow of the dirty filter medium in counter-current to a portion of said filtrated liquid phase utilized as wash liquid, said portion of said filtrated liquid phase being supplied to the wash path from said zone of filtrated liquid phase.

4,126,547
ULTRASONIC OIL SPILL REMOVAL

Arthur Kuris, 3725 Henry Hudson Pkwy., Riverdale, N.Y. 10463

Filed Dec. 7, 1976, Ser. No. 748,187
Int. Cl.[2] C02B *9/02*
U.S. Cl. 210—19 **40 Claims**

9. A method of removing an oil slick layer of material from a water surface comprising the steps of:
A. vibrating a member having an output surface above the threshold range of the oil in a frequency range of 1,000 to 100,000 cycles per second, so as to provide peak accelerations of at least 50,000g,
B. engaging said output surface of said vibrating member with the surface to transmit said vibrations to the oil, said vibrations having a substantial component of motion in a plane substantially parallel to the longitudinal axis of the member;
C. micro-chopping said oil into fine particles by progressively moving said output surface relative to the oil slick layer, whereby the fine particles of oil are dispersed into the body of water and the oil slick is removed,
D. continuously removing the micro-chopped oil from the surface after treatment, by applying suction to the treated surface adjacent the output surface of the vibrating member, and
E. said micro-chopped oil is removed by:
a. supplying a treatment liquid to the treated surface so that contact of said output surface with the treated surface pressurizes the liquid for enhancing the effectiveness of the liquid in mixing with the micro-chopped oil and forming a suspension thereof; and
b. simultaneously applying suction to said treated surface adjacent said member to remove said suspension from the surface.

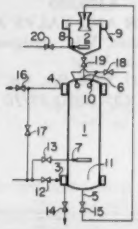
4,126,548
ION EXCHANGE PROCESS

Teruyuki Misumi; Toshio Miyaji, and Masao Kasai, all of Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 607,692, Aug. 25, 1975, abandoned. This application Feb. 2, 1977, Ser. No. 764,855
Claims priority, application Japan, Sep. 9, 1974, 49-103747
The portion of the term of this patent subsequent to Apr. 18, 1995, has been disclaimed.
Int. Cl.[2] B01D *15/02, 15/06*
U.S. Cl. 210—33 **6 Claims**

1. A process for the treatment of a fluid, which comprises passing a fluid to be treated through an inlet in a treatment tank in one direction, said tank being substantially filled with ion exchange resin particles to effect ion exchange between the fluid to be treated and said particles, regenerating the ion exchange particles in the same treatment tank on depletion of their ion exchange activity by passing a solution of regenerant in the direction opposite the direction of the fluid to be treated, and removing contaminants which accumulate in and on said resin particles during passage of said fluid or said regenerant by backwashing in a tank separate from said treatment tank by portionwise removal of portions containing up to one-third of all of said resins containing said contaminants through an outlet provided at the end of said treatment tank opposite the

end at which said regenerating fluid enters the tank, transporting each removed portion of said resins containing said contaminants into the backwash tank, backwashing the transported resins therein, returning said backwashed resins to said treatment tank through an inlet at the opposite end of said treatment tank from which said resins were removed for back-



washing and repeating said transporting and returning of successive portions until all of said resin particles have been backwashed and returned to substantially the same original position in the treatment tank, the resins in the vicinity of said outlet being substantially depleted of their ion exchange activity prior to said backwashing.

4,126,549

TREATMENT OF WATER

Thomas I. Jones, Poynton; Geoffrey Graham, Cheadle, and Michael A. Finan, Macclesfield, all of England, assignors to Ciba-Geigy (UK) Limited, London, England

Continuation-in-part of Ser. No. 717,728, Aug. 24, 1976, abandoned, which is a continuation of Ser. No. 614,102, Sep. 17, 1975, abandoned, which is a continuation of Ser. No. 442,547, Feb. 14, 1974, abandoned. This application Jun. 30, 1977, Ser. No. 811,658

Claims priority, application United Kingdom, Feb. 14, 1973, 7181/73

Int. Cl.[2] **C02B** *5/06*

U.S. Cl. 210—58 **9 Claims**

1. A process for the prevention of the deposition of scale from water caused by scale forming materials in the water and the inhibition of corrosion which comprises

adding to water 0.1 to 100 parts per million by weight of a hydrolyzed terpolymer of maleic anhydride with two ethylenically unsaturated monomers selected from the group consisting of acrylic acid, methacrylic acid, crotonic acid, itaconic acid, aconitic acid, ethyl acrylate, methyl methacrylate, other esters of said acids, acrylonitrile, acrylamide, vinyl acetate, styrene, α-methylstyrene, methyl vinyl ketone, acrolein, ethylene and propylene, the molar ratio of maleic anhydride to the sum of the moles of the other two monomers being from 2.5:1 to 5:1, the molar ratio of the two monomers to each other being from 1:1 to 2:1, and the molecular weight of the terpolymer, measured by vapor phase osmometry in methyl ethyl ketone solution, being in the range below 1000.

4,126,550

FLASH REACTOR

Christian Doerschlag, 1289 Cranwood Sq. N., Columbus, Ohio 43229

Filed Oct. 26, 1977, Ser. No. 845,591

Int. Cl.[2] **C02C** *1/40*

U.S. Cl. 210—60 **17 Claims**

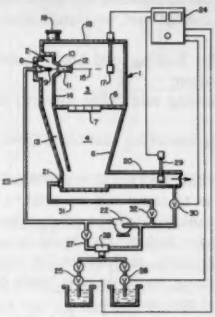
1. A continuous process for treating a waste liquid based on a physicochemical property of the treated waste liquid having a minimum delay in sensing and adjusting and physicochemical property and a relatively short retention time of the waste liquid for such treatment, said process comprising:

(a) passing waste liquid through a pretreating entrance conduit, and into an aspirating chamber, and converting at least a portion of the static pressure of said waste liquid to velocity pressure as the liquid leaves the pretreating entrance conduit and enters said aspirating chamber to form therein an aspirating effect,

(b) passing said waste liquid from said aspirating chamber under said velocity pressure into a primary treating chamber,

(c) passing said waste liquid from said primary treating chamber to a secondary treating chamber,

(d) aspirating a portion of said waste liquid from said secondary treating chamber to said aspirating chamber due to



said aspirating effect therein to form a partial recycle of the treated waste liquid,

(e) sensing said physicochemical property of the waste liquid substantially immediately as it enters said primary treating chamber from the aspirating chamber to determine any deviation in said physicochemical property from a predetermined value,

(f) automatically adding a correcting substance to said waste liquid in said pretreating conduit in response to any deviation noted during the sensing step, and

(g) removing treated waste liquid from said secondary treating chamber.

4,126,551

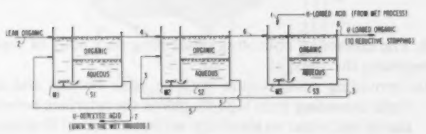
METHOD AND APPARATUS FOR HANDLING SOLVENT EXTRACTION CRUD

Dimitry J. Cognevich, Metairie, La., assignor to Freeport Minerals Company, New York, N.Y.

Filed Apr. 8, 1977, Ser. No. 785,946

Int. Cl.[2] **B01D** *21/04*

U.S. Cl. 210—83 **10 Claims**



1. A method of removing a material from a tank, said material floating within a liquid/liquid interfacial zone, within said tank, said method comprising:

(a) Positioning a blade within said tank, at a substantially vertical orientation, at a predetermined distance above the bottom of said tank, sufficient to engage said material;

(b) Locking said blade in said substantially vertical orientation;

(c) Moving said blade towards one end of said tank;

(d) Unlocking said blade from said first orientation;

(e) Pivoting said blade to a substantially horizontal orienta-

tion so as to cause said material to be moved over a wall of said tank located at said end thereof;

(f) Locking said blade in said substantially horizontal orientation;

(g) Moving said blade away from said end of said tank;

(h) Unlocking said blade from said substantially horizontal orientation;

(i) Repeating step (a).

3. An apparatus for removing a material from a tank, said material floating within a liquid/liquid interfacial zone within said tank, said apparatus comprising:

(a) means for positioning a blade within said tank at a substantially vertical orientation at a predetermined distance above the bottom of said tank sufficient to engage said material;

(b) first means for locking said blade in said substantially vertical orientation;

(c) means for moving said blade towards one end of said tank;

(d) first means for unlocking said blade from said first orientation;

(e) means for pivoting said blade to a substantially horizontal orientation so as to cause said material to be moved over a wall of said tank located at said end thereof;

(f) second means for locking said blade in said substantially horizontal orientation, said means for moving said blade further functioning to move said blade back toward an opposite end of said tank; and

(g) second means for unlocking said blade from said substantially horizontal orientation.

4,126,552

METHOD FOR COLLECTING LIGHT-WEIGHT SUBSTANCES FLOATING ON A LIQUID SURFACE

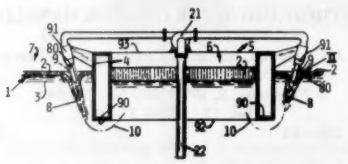
Cornelis Gerardus Middelbeek, Nootdorp, Netherlands, assignor to Ballast Nedam Groep N.V., Amstelveen, Netherlands

Division of Ser. No. 669,834, Mar. 24, 1976, Pat. No. 4,059,526. This application Sep. 6, 1977, Ser. No. 830,394

Claims priority, application Netherlands, Apr. 4, 1975, 7504064

Int. Cl.[2] E02B *15/04*

U.S. Cl. 210—83 **1 Claim**



1. The method of collecting oil floating on a body of water, comprising the steps of:

(a) providing an enclosure with an open bottom and side walls extending from a depth below the interface between the oil and water to above the surface of the oil floating on the body of water;

(b) locating a nozzle above a free surface of said oil on the body of water outside of and spaced from said side walls and downwardly inclined for directing water from said nozzle freely against said free surface to a location beneath the open bottom of said enclosure;

(c) locating a guide member in downwardly inclined position to extend from above said free surface but below said nozzle, to a point below said free surface and in alignment with said nozzle; and

(d) directing a stream of water only from said nozzle to flow therefrom while concentrically surrounding and clinging to said guide member and with such force as to displace oil at said free surface to a location beneath said open bottom of the enclosure.

4,126,553

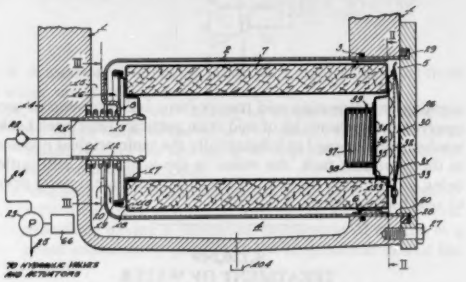
HYDRAULIC FILTER AND VALVE ARRANGEMENT

David A. Berg, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 27, 1976, Ser. No. 754,576

Int. Cl.[2] B01D *27/10*

U.S. Cl. 210—130 **10 Claims**



1. A filter mounting and sealing arrangement in a hyraulic system comprising, a filter chamber with an outlet passage means therefrom located within a receptacle for hydraulic fluid, a sleeve extending from the surface of said receptacle into said fluid receptacle defining the filter chamber with an opening therein, a filter element located within said sleeve, said sleeve reciprocally mounted in said receptacle and defining a filter inlet valve element, resilient means biasing said sleeve axially outwardly, a filter element seat in said filter chamber mounted around said outlet passage means for seating said filter element, a filter inlet valve seat on said filter element seat forming a filter inlet valve with said sleeve for interrupting communication from said receptacle to said filter chamber when said filter element is removed, a cover engaging the end of said sleeve located at the surface of said receptacle for closing said opening and biasing said filter inlet valve to an open position when said cover closes said opening in the filter operating position, a resilient filter element retainer engaging said cover and pressing said filter element in sealing engagement with said filter element seat and said filter element retainer when said cover closes said opening.

4,126,554

SELECTIVELY MARKED THIN-LAYER CHROMATOGRAPHIC PLATE

Kenneth Rainin, Alamo, Calif., assignor to Analtech, Inc., Newark, Del.

Filed Sep. 2, 1977, Ser. No. 830,321

Int. Cl.[2] B01D *15/08*

U.S. Cl. 210—198 C **15 Claims**

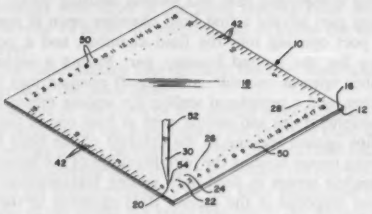
1. A prepared thin-layer chromatographic plate for use with liquid matter comprising:

a. a substrate having a supporting surface:

b. an adsorbent layer of material deposited on said supporting surface of said substrate said adsorbent layer having a surface spaced from said substrate supporting surface;

c. marking applied to said adsorbent layer spaced from said substrate supporting surface, said marking comprising an

amount of material which does not substantially interact with the liquid matter in the chromatographic process,



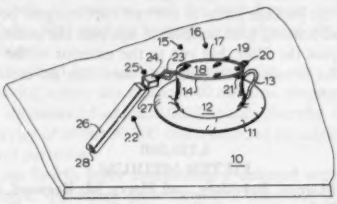
said marking further comprising at least one origin mark for targeting the spotting of the liquid matter.

4,126,555

TEA STRAINER WITH HINGED HANDLE

Richard M. Adams, 31 McAllister Ave., Kentfield, Calif. 94904

Filed Oct. 31, 1977, Ser. No. 846,805
Int. Cl.[2] B01D *35/00*
U.S. Cl. 210—238 **2 Claims**



1. A tea strainer for use in straining tea into a teacup having a lip, comprising:

a bowl-like sieve member having a rim and cup-lip engaging means projecting from the rim, and

a handle secured to said rim and having an inner portion extending out from said rim,

an outer portion, and

a stiff hinge connecting the lower surface of the outer portion to the lower surface of the inner portion, for enabling the outer portion to be in line with the inner portion in one position and for it to swing down to engage a table surface, cooperating with said cup-lip engaging means to hold the sieve member stably in the cup.

4,126,556

APPARATUS FOR REMOVAL OF AN IMMISCIBLE LIQUID FROM A LIQUID MIXTURE

Clare E. Swanson, White Bear Lake, and Michael G. Kelly, Blaine, both of Minn., assignors to Conwed Corporation, St. Paul, Minn.

Filed Feb. 14, 1977, Ser. No. 768,037
Int. Cl.[2] C02B *9/02*
U.S. Cl. 210—242 AS **4 Claims**

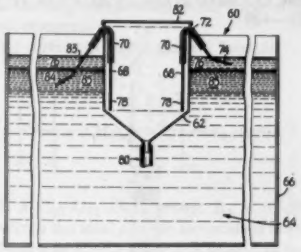
1. Apparatus for continuously removing oil from an aqueous mixture comprising:

(a) a vessel floating in the mixture for collecting the removed oil, said vessel having a closed outside perimeter in contact with the oil and a top perimeter extending above the surface of the mixture and at least one opening located in said top perimeter above the top of the oil layer, said at least one opening communicating between the outside and the inside of said vessel;

(b) a hollow interior in said vessel, said hollow interior extending to a level substantially below the surface of the oil in said mixture;

(c) at least one elongated sorbent material member preferentially sorbtive of oil over water, said at least one member having opposed ends;

(d) means for positioning said at least one member through said at least one opening with a first of said opposed ends positioned in contact with the oil outside said vessel, the



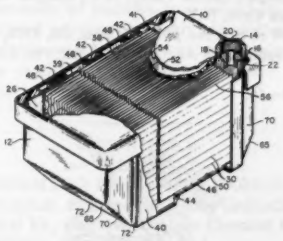
second of said opposed ends positioned within said hollow interior in said vessel at least below the top of the oil layer outside said vessel and the intermediate portion of said member which passes through said opening being above the level of the top of said mixture, whereby oil is siphoned by said sorbent material from the mixture outside said vessel through said intermediate portion and released into said hollow interior in said vessel.

4,126,557

FUEL OIL FILTER

David H. Hodgkins, Manchester, Conn., assignor to Stanadyne, Inc., Hartford, Conn.

Filed Apr. 21, 1977, Ser. No. 789,452
Int. Cl.[2] B01D *35/00*
U.S. Cl. 210—249 **9 Claims**



1. A totally enclosed disposable filter housing having an inlet chamber and an outlet chamber separated by a filtering medium, said filtering medium comprising a plurality of pleats of accordian pleated filter paper, the side walls of said housing having inwardly directed ribs intermediate the ends thereof, each of said ribs forming a narrow ridge projecting from said side walls, beads of a settable sealant on the end pleats of the filter paper covering and spanning said ribs to provide a construction wherein the inherent resilience of the pleated filter paper biases the beads on the end pleats of the filter paper into contact with the ribs during the curing thereof.

4,126,558

BLOOD FILTRATION UNIT WITH MANUAL VENT MEANS

Alfred R. Luceyk, Santa Paula, Calif., assignor to Johnson & Johnson, New Brunswick, N.J. and Purolator, Inc., Del.

Continuation-in-part of Ser. No. 545,961, Jan. 31, 1975, abandoned, which is a division of Ser. No. 473,479, May 28, 1974, Pat. No. 3,954,623. This application Nov. 22, 1976, Ser. No. 743,449

Int. Cl.[2] B01D *21/24, 23/20, 25/30, 29/42*

U.S. Cl. 210—429 **2 Claims**

1. In a blood transfusion filtration unit having a filter cartridge disposed within a housing the improvement comprising a manually operable air vent valve disposed in the upper portion of said housing said air vent valve comprising an actuating member, said member comprising a circular portion disposed on the outside of said housing, said circular portion having a resilient periphery in contact with the outside surface of said housing, a reduced diameter portion extending from the center of said circular portion through an opening in the housing and an expanded and portion disposed from said reduced diameter portion within the housing; and end portion functioning to provide a seal with the inside surface of said housing, an annular air filtration media disposed between the housing and the resilient periphery of said circular portion of said actuating member on the outside of the housing; said resilient periphery being deformed in response to manual pressure applied to said circular portion so as to bias said expanded end portion in such a manner as to break said seal and provide a continuous unobstructed flow path for air from within said housing, through said filtration media, to atmosphere.

4,126,559

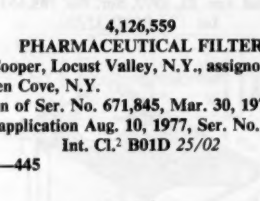
PHARMACEUTICAL FILTER

Roydon B. Cooper, Locust Valley, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Continuation of Ser. No. 671,845, Mar. 30, 1976, abandoned. This application Aug. 10, 1977, Ser. No. 823,371

Int. Cl.[2] B01D *25/02*

U.S. Cl. 210—445 **15 Claims**



1. A filter assembly free from internal seals but having a replaceable filter element, for filtering pharmaceutical fluid materials without danger of microorganism contamination of downstream filter effluent, comprising, in combination, a filter housing comprising first and second housing parts; the first housing part having a first fluid chamber open at one side, a fluid port opening into the fluid chamber, and a peripheral sealing lip; the second housing part having a second fluid chamber open at one side, a fluid port opening into the fluid chamber, and a peripheral sealing lip; sealing means between the peripheral lips and sealing with at least one of the peripheral lips against leakage to the exterior of the filter housing; retaining means holding the peripheral lips of the housing parts and sealing means in fluid-tight sealing juxtaposition; a filter element disposed in the second fluid chamber in the second housing part and comprising a tubular filter confined between and permanently sealed in a fluid-tight seal to end caps at each end thereof, of which a first end cap is closed and a second end cap has an opening therethrough communicating the interior of the tubular filter with the first fluid chamber, and a peripheral lip integral with the second end cap and extending into sealing engagement on one side with one side of the sealing means, and shaped to fit between and seal on its other side against one side of one peripheral sealing flange of the other housing part, the peripheral lip extending across and closing off the open sides of the first and second fluid chambers without any internal seal, so that fluid communication therebetween is restricted to the opening in the second end cap via the filter, and the leakage paths at the end cap, integral peripheral lip seal, and housing part peripheral lips past the sealing means do not bypass the filter, but run to the exterior of the housing between the housing parts, so that there are no internal seal leakage paths.

4,126,560

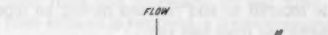
FILTER MEDIUM

James T. Marcus, Belvidere, and Harry M. Kennard, Chester, both of N.J., assignors to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 679,486, Apr. 23, 1976, abandoned. This application Jun. 21, 1977, Ser. No. 808,544

Int. Cl.[2] B01D *25/04*

U.S. Cl. 210—489 **2 Claims**



1. A one piece monolithic filter media for removing particle contaminants and gels from a molten fluid polymer stream passing through the media, consisting of at least:

three layers of materials, each layer

sinter bonded to the adjacent layer,

(a) the first layer comprising a sintered web of metal fibers wherein the metal fibers are bonded to each other, the fibers each having a diameter ranging from about 4 microns to about 25 microns, the density of the layer ranging from about 35% to 60% and the pore sizes in the layer ranging from about 10 microns to about 150 microns;

(b) the second layer comprising a metallic wire screen having pore sizes ranging from about 40 microns to about 150 microns and adjacent the first layer;

(c) the third layer comprising a sintered web of metal fibers wherein the metal fibers are sinter bonded to each

other, the fibers each having a diameter ranging from about 4 microns to about 25 microns, the density of the layer ranging from about 35% to about 60% and the average pore sizes in the layer ranging from about 5 microns to about 40 microns and adjacent the second layer;

(d) the fluid passing first through the first layer and last through the third layer;

(e) the size of the pores of the second layer preselected to be larger than the pore sizes of the first and third layers trapping a high percentage of the contaminants and gels therein thereby substantially increasing the contaminant and gel holding capacity of the filter media, the thickness of the media is a small fraction of the surface area.

2. A one piece monolithic filter media for removing particle contaminants and gels from a molten liquid polymer passing therethrough, consisting of at least:

four layers of materials, each layer

sinter bonded to each adjacent layer,

(a) the first layer comprising a sintered web of metal fibers, the fibers each having a diameter of approximately 25 microns, and the web having a density of about 15% and an average pore size of about 80 microns;

(b) the second layer comprising a sintered web of metal fibers, the fibers each having a diameter of approximately 12 microns, and the web having a density of about 60% and an average pore size of about 30 microns;

(c) the third layer comprising a metallic wire screen and having a pore size of about 40 microns, the wires having a diameter of about 0.0014 inches thereby forming a cavity of about 90,000 cubic microns for capturing gels and particles;

(d) the fourth layer comprising a sintered web of metal fibers, the fibers each having a diameter of approximately 8 microns, and the web having a density of about 15% and an average pore size of about 10 microns; the size of the pores in the third layer being larger than the average pore sizes of the adjacent second and fourth layers, the thickness of the media is a small fraction of the surface area.

4,126,561

COMPOSITION FOR TREATING FABRICS, METHOD FOR MAKING AND USING THE SAME

Graham Barker, 16-11 Berdan Ave., Fairlawn, N.J. 07410

Continuation-in-part of Ser. No. 486,351, Jul. 8, 1974, Pat. No. 4,077,890, which is a continuation-in-part of Ser. No. 335,311, Feb. 23, 1973, abandoned. This application Feb. 6, 1978, Ser. No. 875,314

Int. Cl.[2] D06M *13/24*

U.S. Cl. 252—8.6 **14 Claims**

1. A solid, shaped composition for treating fabric materials to impart desired properties thereto comprising a homogeneous mixture, based on 100% solids on a dry weight basis, of 0.1 to 20% by weight of a water soluble or dispersible film former adhesive, 10–80% by weight of a water-insoluble fine particulate and 10 to 85% by weight of adjuvant capable of imparting desired softness, brightness, fragrance, antistatic, germicidal and/or soil release properties to said fabric materials, said adhesive being present in an amount to form with said adjuvant a uniform, integrated, self-supporting cellular foam having a density in a range of 0.2 to 0.8, and a bubble size in a range of 5 to 50 microns, said foam being dried to a moisture content of less than about 2% and capable of maintaining a given shape under external stress, said composition being disintegrable over an extended period of time in or under agitation upon the application of warm air and in the presence of moisture to release substantially all of said adjuvants and to leave substantially no residue of said adhesive.

4,126,562

TEXTILE TREATMENT COMPOSITIONS

Pierre C. E. Goffinet, and Jean-Pierre C. I. M. Leclercq, both of Brussels, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 31, 1977, Ser. No. 801,685

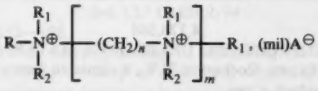
Claims priority, application Luxembourg, Jun. 4, 1976, 75088

Int. Cl.[2] D06M *13/38*

U.S. Cl. 252—8.8 **5 Claims**

1. A textile-treating composition in the form of an aqueous dispersion and comprising

(i) a cationic surfactant of the general formula



wherein R is a C_{10}–C_{22} alkyl group; R_1 is $(C_2H_4O)_pH$ or $(C_3H_6O)_pH$ where the total p in the molecule is not more than 15; R_2 is hydrogen or C_1–C_4 alkyl; n is from 2 to 6; m is from 1 to 3 and A is an anion, and

(ii) a nonionic fabric-conditioning substance selected from fatty acid esters of mono- or polyhydric alcohols having from 1 to 8 carbon atoms and anhydrides thereof,

wherein the ratio fo said cationic surfactant to said nonionic fabric-conditioning substance is from 4:1 to 2:3.

4,126,563

COMPOSITION FOR TREATING FABRICS, METHOD FOR MAKING AND USING THE SAME

Graham Barker, 16-11 Berdan Ave., Fairlawn, N.J. 07410

Division of Ser. No. 486,351, Jul. 8, 1974, Pat. No. 4,077,890, which is a continuation-in-part of Ser. No. 335,311, Feb. 23, 1973, abandoned. This application Dec. 23, 1977, Ser. No. 863,938

Int. Cl.[2] D06M *13/10*

U.S. Cl. 252—8.8 **8 Claims**

1. A composition for treating fabric or clothes to impart desired properties thereto comprising a homogeneous aqueous mixture of a minor amount of an adhesive and at least one adjuvant capable of imparting softness, brightness, fragrance, antistatic, germicidal and/or soil release properties to said fabric or clothes, said composition being substantially completely and quickly disintegrable upon the application of heat and in the presence of moisture to substantially completely release all of said adjuvants on fabric or clothes in contact therewith and to leave substantially no residue of said adhesive on said fabric or clothes and in the environment around said fabric or clothes.

4,126,564

SPIN FINISH FOR POLYAMIDE CARPET YARN

Robert M. Marshall, Chester, and Kimon C. Dardoufas, Richmond, both of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 12, 1977, Ser. No. 859,762

Int. Cl.[2] D06M *13/10*

U.S. Cl. 252—8.9 **8 Claims**

1. A spin finish for polyamide yarn to be processed at high temperature and high tension into plied, bulked, continuous filament carpet yarn, said finish being an oil in water emulsion of about 10 to 20 percent by weight of said oil portion, said oil portion consisting essentially of from about 55 to 65 percent by weight of coconut oil, about 20 to 35 percent by weight of polyoxyethylene hydrogenated castor oil, and about 7 to 15 percent by weight of potassium salt of polyoxyethylene tridecyl phosphate.

4,126,565
TONERS FOR COLOR FLASH FUSERS CONTAINING A PERMANENT COLORANT AND A HEAT SENSITIVE DYE

Myron J. Lenhard, Penfield, and James D. Rees, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 27, 1976, Ser. No. 754,807
Int. Cl.[2] G03G *9/10*
U.S. Cl. 252—62.1 P **7 Claims**

1. A developer comprising carrier particles and toner particles wherein said toner comprises resin, permanent colorant and heat sensitive dye wherein said dye upon heating decomposes to form substantially colorless products.

4,126,566
ELECTROSTATIC DEVELOPER MATERIAL

Robert W. Brown, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

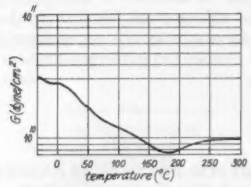
Division of Ser. No. 435,372, Jan. 21, 1974, Pat. No. 3,916,064. This application Feb. 25, 1975, Ser. No. 553,052
Int. Cl.[2] G03G *9/10*
U.S. Cl. 252—62.1 P **5 Claims**

1. A developer composition for an imaging surface bearing an electrostatic latent image comprising a dry mixture of finely-divided electrostatically attractable toner particles and a plurality of freely movable carrier particles, said carrier particles having an average diameter of between about 30 microns and about 1,000 microns and comprising a core surrounded by an outer coating of matrix material and solid finely-divided particles of at least one compound selected from the group consisting of phthalic acid, isophthalic acid, terephthalic acid, and the metal and ammonium salts thereof having an average diameter less than about 10 microns substantially uniformly dispersed throughout said outer coating.

4,126,567
PERMANENT MAGNET COMPOSITES AND METHOD THEREFOR

Junzo Otera; Tsutomu Makimoto, both of Kurashiki; Wataru Shinoda, and Norihisa Hattori, both of Hiroshima, all of Japan, assignors to Kuraray Co., Ltd., Japan and Toda Kogyo Corporation, Japan

Filed Dec. 2, 1976, Ser. No. 746,737
Claims priority, application Japan, Dec. 2, 1975, 50-144269; Dec. 2, 1975, 50-144270; Sep. 24, 1976, 51-114904
Int. Cl.[2] H01F *1/34, 1/37*
U.S. Cl. 252—62.54 **12 Claims**



1. A composition of matter curable into a permanent, high-energy magnetic composite exhibiting improved high temperature thermal stability, comprising:

(a) a cross-linkable liquid rubber compound selected from the group consisting of liquid polybutadiene, liquid polyisoprene, liquid polyisobutylene, the corresponding liquid copolymers, and such polymers modified by hydroxyl, carboxyl, maleic anhydride, isocyanate, and acryl groups, said compound having a Brookfield viscosity at 25° C in the range of from about 5×10^3 to about 5×10^5 cps; and

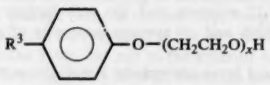
(b) a particulate of a magnetic ferrite of the general formula $MO.n\ Fe_2O_3$; wherein M is selected from the group consisting of Ba, Sr, Pb, and mixtures thereof; and *n* has a value in the range of from about 4.5 to about 6.2, said particulate present within the range of from about 5 to about 14 parts per part of said liquid rubber compound.

4,126,568
POLYVINYL CHLORIDE WIRE INSULATION MADE CONDUCTIVE AT ELEVATED TEMPERATURES BY THE USE OF ADDITIVES

Charles H. Rogers, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 671,217, Mar. 29, 1976, Pat. No. 4,098,711. This application May 13, 1977, Ser. No. 796,780
Int. Cl.[2] H01B *3/44, 3/18;* H05B *3/10, 3/18*
U.S. Cl. 252—63.2 **5 Claims**

1. An improved polyvinyl chloride (PVC) electrical insulating composition for insulating spaced metallic conductors, said composition insulating said conductors at room temperature and allowing an electrical current to flow between said conductors at elevated temperatures, the improvement comprising incorporating into the polyvinyl chloride composition at a level effective to impart reduced volume resistivity at elevated temperatures to said polyvinyl chloride composition alkylphenoxy poly (ethyleneoxy) ethanols having the general structural formula



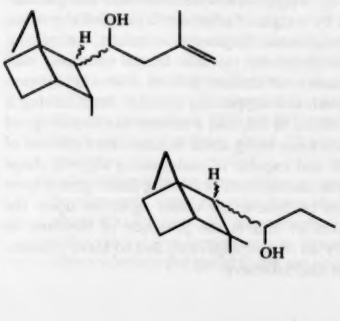
wherein R^3 is an alkyl group containing from 6 to 12 carbon atoms and *x* is from 5 to 16.

4,126,569
PROCESS OF ENHANCING THE AROMA OF A SOAP WITH LIQUID DETERGENT NORBORNANE DERIVATIVES

Kenneth K. Light, Long Branch; James M. Sanders, Eatontown; Manfred H. Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, N.J.; John B. Hall, Rumson, N.J.; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middletown, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853. This application Dec. 13, 1977, Ser. No. 860,135
Int. Cl.[2] C11D *3/50*
U.S. Cl. 252—89 R **4 Claims**

1. A process for augmenting or enhancing the aroma of a liquid detergent comprising the step of intimately admixing with said liquid detergent a norbornane derivative having a structure selected from the group consisting of:



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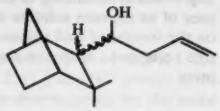


and mixtures of same until a substantially homogeneous composition is obtained, and norbornane derivative being present in said detergent in an amount of from 1% up to 3% by weight of such composition.

4,126,570

PROCESS OF ENHANCING THE AROMA OF A DETERGENT WITH NORBORNANE DERIVATIVES

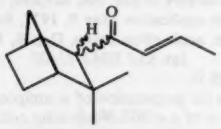
Kenneth K. Light, Long Branch; James M. Sanders, Eatontown; Manfred H. Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, N.J.; John B. Hall, Rumson, N.J.; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middletown, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

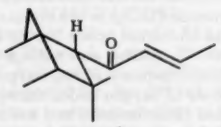
Division of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853. This application Dec. 13, 1977, Ser. No. 860,139

Int. Cl.[2] C11D *3/50*

U.S. Cl. 252—89 R **6 Claims**

1. A process for augmenting or enhancing the aroma of a liquid detergent comprising the step of intimately admixing with said detergent a norbornane derivative either (i) having a structure selected from the group consisting of:





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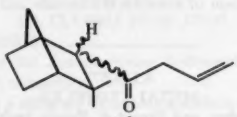

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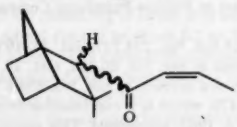


and mixtures of same or (ii) a mixture of 2-(2-butenoyl)-3,3-dimethylnorbornane; 2-(3-butenoyl)-3,3-dimethylnorbornane; 2-(2-butenoyl)-3,3-dimethylnorbornane and alpha-allyl-3,3-dimethyl-norbornanemethanol until a substantially homogenous composition is obtained, said norbornane derivative or said mixture being present in said liquid detergent in an amount of from 1% up to 3% by weight.

4,126,571

PROCESS OF ENHANCING THE AROMA OF A SOAP WITH NORBORNANE DERIVATIVES

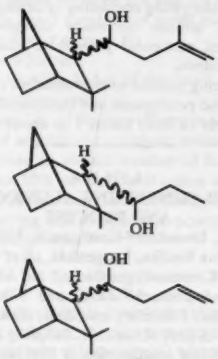
Kenneth K. Light, Long Branch; James M. Sanders, Eatontown; Manfred H. Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, N.J.; John B. Hall, Rumson, N.J.; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middletown, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853. This application Dec. 13, 1977, Ser. No. 860,143

Int. Cl.[2] C11D *9/44*

U.S. Cl. 252—108 **4 Claims**

1. A process for augmenting or enhancing the aroma of a soap comprising the step of intimately admixing with soap chips a norbornane derivative having a structure selected from the group consisting of:



and mixtures of same until a substantially homogenous composition is obtained, said norbornane derivative being present in the composition in an amount of from 1% up to 3% by weight of the soap composition.

4,126,572

BUILT LIQUID DETERGENT COMPOSITION

Ho Tan Tai, Santes, France, assignor to Lever Brothers Company, New York, N.Y.

Filed Mar. 3, 1977, Ser. No. 773,863

Claims priority, application United Kingdom, Mar. 11, 1976, 9802/76

Int. Cl.[2] C11D *1/83*

U.S. Cl. 252—89 R **3 Claims**

1. An aqueous built liquid detergent composition, consisting essentially of:

(a) 5–15% by weight of an anionic synthetic detergent selected from the group consisting of C_{10}–C_{24} alkylbenzene sulphonates, C_{10}–C_{24} alkane sulphonates and C_{10}–C_{24} alkylether sulphates containing 1–10 moles of ethylene- or propylene oxide;

(b) 1–5% by weight of a nonionic synthetic detergent selected from a group consisting of adducts of 5–30 moles of an alkylene oxide to C_{10}–C_{24} primary alcohols, C_{10}–C_{24} secondary alcohols, and C_9–C_{18} alkylphenols;

(c) 1–5% by weight of a sodium or potassium salt of dimerized oleic acid;

(d) 1–25% by weight of a sodium or potassium builder salt selected from the group consisting of orthophosphates, pyrophosphates, tripolyphosphates, carbonates and mixtures thereof;

(e) 0.75–8.5% by weight of an alkali metal or ammonium salt of xylene-, toluene- or cumene sulphonic acid;

(f) 0.5–2.5% by weight of a monoalkane phosphonic acid, in which the alkane group contains 4–10 carbon atoms, or the alkali metal or ammonium salt thereof, whereby the amount of salt of xylene sulphonic acid is more than 4% by weight when the amount of the monoalkane phosphonic acid is 1% or less.

4,126,573
PEROXYACID BLEACH COMPOSITIONS HAVING INCREASED SOLUBILITY

James P. Johnston, Montgomery, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 27, 1976, Ser. No. 718,283
Int. Cl.[2] C11D *7/56, 7/38*
U.S. Cl. 252—99 **10 Claims**

1. Peroxyacid bleaching particles consisting essentially of:
(a) an inner core of a solid peroxyacid compound selected from the group consisting of diperoxyazelaic acid and diperoxydodecanedioic acid, and
(b) as a coating a water-soluble surfactant compound selected from the group consisting of organic anionic sulfate compounds, anionic sulfonate compounds, semipolar amine oxides, semipolar phosphine oxides and zwitterionic compounds,

said surfactant being present in an amount of from about 5% to about 100% of said peroxyacid and the coated particles having a particle diameter of from about 1 to about 150 microns.

4,126,574
SURFACTANT-CONTAINING ALUMINOSILICATES AND PROCESS

Elmar Reinwald, Dusseldorf-Holthausen; Milan J. Schwuger, Haan, and Heinz Smolka, Langenfeld, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, both of, Germany

Continuation-in-part of Ser. No. 763,667, Jan. 28, 1977, abandoned, which is a continuation of Ser. No. 503,467, Sep. 5, 1974, abandoned. This application Jun. 30, 1977, Ser. No. 811,964
Claims priority, application Austria, Sep. 7, 1973, 7771/73; Oct. 1, 1973, 8382/73; Dec. 3, 1973, 10098/73
Int. Cl.[2] C01B *33/28;* **C02B** *1/44;* **C11D** *1/38, 3/12*
U.S. Cl. 252—179 **14 Claims**

1. Cation-exchanging, water-insoluble, amorphous aluminosilicates containing at least 3 mols of bound water for every mol of Al_2O_3 and at least 0.01% by weight of a cationic surface-active compound active in the presence of water hardness formers, and having for every mol of Al_2O_3, from 0.7 to 1.5 mols of Cat_2O, where Cat is a cation selected from the group consisting of sodium, potassium and lithium, and from 0.8 to 6 mols of SiO_2, said aluminosilicates having a calcium sequestering power of from 50 to 200 mg CaO/gm of anhydrous active substance when measured at 50° C. by the Calcium Binding Power Test Method set out in the specification and a particle size of less than 30 μ, and being produced by the precipitation of said aluminosilicate in an aqueous solution, wherein said reaction is conducted in the presence of an aqueous solution of said surface-active compound.

13. The process for the preparation of amorphous aluminosilicates by reacting water-soluble aluminates with water-soluble silicates in the presence of water and recovering water-insoluble amorphous aluminosilicates, where said water-soluble aluminates and silicates have cations selected from the group consisting of sodium, potassium and lithium and the amounts employed are selected so that the water-soluble amorphous aluminosilicates have for every mol of Al_2O_3, from 0.7 to 1.5 mols of Cat_2O where Cat represents said cation, and from 0.8 to 6 mols of SiO_2, said amorphous aluminosilicate containing at least 3 mols of bound water for every mol of Al_2O_3 and having a calcium sequestering power of from 50 to 200 mg CaO/gm of anhydrous active substance, when measured at 50° C. by the Calcium Binding Power Test Method set out in the specification, and a particle size of less than 30 μ, **the improvement consisting of conducting said reaction in the presence of an aqueous solution of at least** 0.01% by weight, based on the weight of said aluminosilicates of a cationic surface-active compound active in the presence of water hardness formers.

4,126,575
BLOOD CONTROL STANDARD

Allan L. Louderback, 9661 Longden Ave., Temple City, Calif. 91780

Filed Nov. 22, 1977, Ser. No. 853,928
Int. Cl.[2] G01N *33/16*
U.S. Cl. 252—408 **19 Claims**

1. A sealed receptacle containing a blood control standard for the quality control of the measurement of blood pH and gases comprising a suspension of treated erythrocytes and a gaseous head space having a volume which is at least equal to about the volume of said erythrocytes, said erythrocytes being treated by thoroughly washing in saline solution, mildly admixing with a solution of aldehyde and saline, thoroughly washing in saline solution, and forming a suspension, at least a portion of the suspension of erythrocytes separately being further treated with carbon monoxide and then combined with a portion of erythrocytes that has been untreated with carbon monoxide, said gaseous head space comprising from about 0% to 15% CO_2, from about 0% to about 25% O_2, and the balance selected from the group consisting of N_2 and inert gases and mixtures thereof.

4,126,576
PROCESS FOR PREPARATION OF CATALYTIC COMPONENTS FOR POLYMERIZATION OF α-OLEFINS

Masuo Inoue, Chigasaki, Japan, assignor to Toho Titanium Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 629,890, Nov. 7, 1975, abandoned. This application May 9, 1977, Ser. No. 795,147
Claims priority, application Japan, Dec. 6, 1974, 49/140793
Int. Cl.[2] B01J *31/02*
U.S. Cl. 252—429 B **11 Claims**

1. In a process for preparation of a component of a catalyst for polymerization of α-olefin comprising adding (A) the reaction product of titanium tetrachloride and an organic ether to (B) titanium trichloride ($TiCl_3$) or to a composition of titanium trichloride and an aluminum halide having the formula substantially equal to Ti_3AlCl_{12}, and milling the mixture; the improvement which comprises adding oxygen and (A) to (B) wherein the amount of oxygen added during the step of the addition of (A) and (B) is from 0.1 to 5 mole % based on the number of moles of titanium trichloride or the number of moles of the composition of titanium trichloride and aluminum halide.

4,126,577
METAL COMPLEX

William B. Hughes, and Ernest A. Zuech, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 274,727, Jul. 24, 1972, abandoned, which is a division of Ser. No. 80,230, Oct. 12, 1970, Pat. No. 3,691,253, which is a division of Ser. No. 694,875, Jan. 2, 1968, Pat. No. 3,562,178, which is a continuation-in-part of Ser. No. 635,656, May 3, 1967, abandoned. This application Aug. 29, 1974, Ser. No. 501,582
Int. Cl.[2] B01J *23/20, 23/22, 31/18*
U.S. Cl. 252—431 N **18 Claims**

1. A metal complex represented by the formula $[(L)_a(NO)_bM_cZ_d]_x$ wherein M is niobium or vanadium; each Z is a halogen, CN, SCN, OCN, or $SnCl_3$ radical; each (L) is a ligand represented by the formula R_3QO, O, $[(RCO)_2CH—$, R—S—R, $R^5(CN)_b$, $R^5(COO—_b$, ($R^5COR^2COO—$, or

R^3 S;

wherein *a*, *b*, *c*, and *d*, are integers wherein *a* is 1–6, *b* is 1–2, *c* is 1–4, *d* is 0–6, and the number of Z, (L), and NO groups in the complex is not greater than the number required for the metal to achieve the closed shell electronic configuration of the next higher atomic number inert gas; *x* is the number of the polymeric state of the complex; Q is phosphorus, arsenic, or antimony; R is an aromatic or saturated aliphatic hydrocarbon radical having up to 20 carbon atoms per molecule; R^2 is a divalent R radical; R^3 is a divalent saturated or ethylenically unsaturated aliphatic radical having from 4 to 10 carbon atoms; and R^5 is an aromatic, saturated aliphatic, or ethylenically unsaturated aliphatic radical having up to 30 carbon atoms.

4,126,578

SULFURIC ACID CATALYST CONTAINING VANADIUM AND PROCESS THEREFOR

Fawzy G. Sherif, Stony Point, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 18, 1977, Ser. No. 816,238

Int. Cl.² B01J *27/02, 31/02, 31/12;* **C01B** *17/78*

U.S. Cl. 252—440 **9 Claims**

1. A process for preparing a catalyst for the oxidation of sulfur dioxide to sulfur trioxide which comprises wetting a silica carrier having an alumina content between about 2.5 and about 5.0 percent by weight with an aqueous solution of potassium vanadate and a potassium salt of an acid having a pK_a between about 3 and about 7, drying the wet carrier and then sulfating the carrier.

4,126,579

HYDROCARBON CONVERSION CATALYST MANUFACTURE

Theodore V. Flaherty, Jr., Glen Burnie; Richard J. Nozemack, Lutherville, and Hanson L. Guidry, Baltimore, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 780,143, Mar. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 696,983, Jun. 7, 1976, abandoned. This application Jul. 12, 1977, Ser. No. 814,819

Int. Cl.² B01J *29/06, 37/00*

U.S. Cl. 252—455 Z **8 Claims**

1. A process for manufacturing hydrocarbon conversion catalysts which comprises:

(a) preparing a silica sol by mixing a sodium silicate solution with a sufficient quantity of an acidic component selected from the group consisting of acids, acid salts, and mixtures thereof to adjust the pH to about 0.5 to 3.3;

(b) preparing a slurry of a crystalline alumino-silicate zeolite in water and adding a sufficient quantity of sodium silicate to bring the pH to above 10.0;

(c) rapidly mixing the sol and the slurry to obtain a rapidly gelling reactant mixture;

(d) spraying the reactant mixture into a gaseous atmosphere, said atmosphere being at ambient temperature and substantially 100% relative humidity, to obtain formed gelled particles of silica gel bound zeolite containing catalyst, whereby said formed particles are substantially completely gelled without removal of moisture therefrom; and

(e) washing, drying and recovering the catalyst.

4,126,580

STABLE PEROVSKITE CATALYSTS

Alan Lauder, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 566,108, Apr. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 463,988, Apr. 25, 1974, abandoned, which is a continuation-in-part of Ser. No. 405,052, Oct. 10, 1973, Pat. No. 3,897,367. This application Dec. 15, 1976, Ser. No. 750,637

The portion of the term of this patent subsequent to Jul. 29, 1992, has been disclaimed.

Int. Cl.² B01J *21/04, 23/10, 23/56, 23/58*

U.S. Cl. 252—462 **13 Claims**

1. In a catalytic metal oxide having the general formula ABO_3 and a perovskite crystal structure, in which A and B are each at least one metal cation in sites of type A and of type B, respectively, wherein:

(1) the type A cation sites are occupied by metals each having an ionic radius between 0.8 and 1.65 A;

(2) the type B cation sites are occupied by metals each having an ionic radius between 0.4 and 1.4 A; and

(3) substantially equal numbers of metal cations occupy the sites of type A and of type B,

the improvement wherein:

(a) the Lattice Stability Index of the metal oxide is less than about 12.0 electron volts;

(b) at least about 1% of the type B cation sites are occupied by cations of at least one catalytic metal of the platinum group or having an atomic number of from 24 to 29; and

(c) at least about 10% of the type B cation sites are occupied by cations of at least one metal differing from the catalytic metal and having a first ionization potential of no greater than 7.1 electron volts.

4,126,581

CATALYST CONTAINING COPPER OXIDE AND ZINC OXIDE, ITS MANUFACTURE AND ITS USE FOR THE CONVERSION OF CARBON MONOXIDE

André Sugier, Rueil Malmaison; Philippe Courty, Houilles, and Edouard Freund, Rueil Malmaison, all of France, assignors to Societe Francaise des Produits pour Catalyse, France

Filed May 27, 1977, Ser. No. 801,261

Claims priority, application France, May 28, 1976, 76 16432

Int. Cl.² B01J *21/04, 23/06*

U.S. Cl. 252—463 **12 Claims**

1. A catalyst containing 10–60% by weight of copper oxide, 5–40% by weight of zinc oxide and 30 to 70% of aluminous cement, the total content of copper oxide and zinc oxide being from 30 to 70% by weight, said aluminous cement containing 10–50% by weight of CaO and from 30 to 85% by weight Al_2O_3, the total content of CaO and Al_2O_3 being at least 70% by weight and being sufficient to provide at least 15–50% of calcium aluminates based on the weight of the catalyst.

4,126,582

MANUFACTURE OF SUPPORTED SILVER CATALYSTS

Hans Diem; Christian Dudeck; Werner Simmler, all of Ludwigshafen; Siegfried Marquardt, Bobenheim-Roxheim, and Walter Stingl, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 15, 1977, Ser. No. 824,524

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1976, 2639342

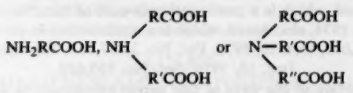
Int. Cl.² B01J *23/50*

U.S. Cl. 252—476 **9 Claims**

1. A process for the manufacture of supported silver catalysts in which metallic silver is deposited on a carrier as a dense, well-adhering layer which comprises the steps of:

(a) contacting the carrier with a reducing agent wherein said carrier surface has not been subjected to prior activation or sensitization, and

(b) treating the carrier from step (a) with a silver salt solution, said solution containing a water-soluble silver salt, ammonium hydroxide and at least one carboxylic acid amino compound of the formula



where R, R' and R'' are identical or different hydrocarbon radicals or their salts, whereby the silver is deposited by an electroless method in reaction times of from about 1 to 10 minutes.

4,126,583

HIGH TEMPERATURE THERMISTORS (NTC)

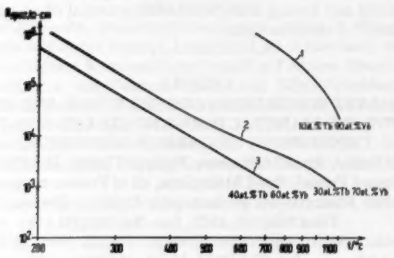
Ulrich Walter, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 5, 1977, Ser. No. 822,196

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1976, 2637225; Aug. 18, 1976, 2637227

Int. Cl.[2] H01B *1/08*

U.S. Cl. 252—521 **8 Claims**



1. A thermistor for use in high temperature environments comprised of a sintered oxide material containing a rare earth metal mixture therein, said rare earth metal mixture consisting essentially of a mixture of terbium oxide and a material selected from the group consisting of samarium oxide and ytterbium oxide, said thermistor having an operating temperature extending from about 200° C. to 1100° C.

4,126,584

PROCESS FOR TREATING SILVER OXIDE

Alexander S. Borbely, Peabody, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Apr. 1, 1977, Ser. No. 783,584

Int. Cl.[2] C01G *5/00*; H01M *4/54*

U.S. Cl. 252—518 **8 Claims**

4. A process for compressing monovalent silver oxide into pellets which comprise the steps of heating the monovalent silver oxide to a temperature in the range of about 150° C. to about 300° C. for a period of time from about 1 hour to about 5 hours in an air atmosphere, and thereafter pressing the resulting silver oxide into pellets with a compressive force of between about 5 and 40 tons per square inch.

4,126,585

2-METHYL-2-ETHYL-HEXANOATE ESTER PERFUME COMPOSITIONS

Jens Conrad, Hilden; Ulf-Armin Schaper, Dusseldorf, and Klaus Bruns, Krefeld-Traar, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

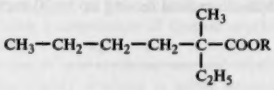
Filed Jun. 2, 1977, Ser. No. 802,787

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1976, 2626142

Int. Cl.[2] C11B *9/00*

U.S. Cl. 252—522 **9 Claims**

1. A perfumery composition comprising from about 1% to 50% by weight of at least one 2-methyl-2-ethyl-hexanoate ester of the formula



wherein R is a member selected from the group consisting of alkyl having from 1 to 5 carbon atoms, alkenyl having from 3 to 5 carbon atoms and alkynyl having from 3 to 5 carbon atoms, and the remainder customary constituents of perfumery compositions.

4,126,586

PROCESS OF SPRAY DRYING NONIONIC SURFACTANT-CONTAINING DETERGENTS ALSO CONTAINING A CATIONIC NITROGEN COMPOUND

Michael Curtis; Richard L. Davies, and John S. Galvin, all of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Feb. 7, 1977, Ser. No. 766,170

Claims priority, application United Kingdom, Feb. 10, 1976, 5122/76

Int. Cl.[2] C11D *1/835, 11/02*

U.S. Cl. 252—524 **8 Claims**

1. A process for preparing a spray-dried fabric-washing detergent powder substantially free from water-soluble calcium and magnesium salts which comprises:

(a) forming an aqueous slurry comprising from 4 to 20% by weight, based on the spray-dried powder, of a nonionic surfactant and from 10 to 60% based on the spray-dried powder of a non-phosphate detergency builder, or a mixture of a non-phosphate detergency builder with a phosphate detergency builder; and

(b) spray-drying the slurry to form a spray-dried powder, wherein the process comprises the step of spraying the slurry in the presence of from 1/4 to 6% by weight, based on the spray-dried powder, of a compound containing a positively charged nitrogen atom selected from quaternary ammonium salts, imidazolinium salts and betaines.

8. A process for preparing a spray-dried fabric-washing detergent powder substantially free from water-soluble calcium and magnesium salts which comprises:

(a) forming an aqueous slurry comprising 4 to 20% by weight, based on the spray-dried powder, of a nonionic surfactant and from 10 to 60% based on the spray-dried powder of a phosphate detergency builder consisting of anhydrous sodium tripolyphosphate containing at least 15% by weight of phase 1 material, or consisting of sodium tripolyphosphate which has been prehydrated; and

(b) spray-drying the slurry to form a spray-dried powder wherein the process comprises the step of spraying the slurry in the presence of from ¼ to 6% by weight, based on the spray-dried powder, of a compound containing a positively charged nitrogen atom selected from quaternary ammonium salts, imidazolinium salts, and betaines.

4,126,587

CLEANING AGENTS FOR CONTACT LENSES

Murray J. Sibley, Berkeley; Gordon H. K. Yung, Sunnyvale, and Petronio D. Urrea, Pleasanton, all of Calif., assignors to Barnes-Hind Pharmaceuticals, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 651,744, Jan. 23, 1976, Pat. No. 4,048,122. This application Mar. 28, 1977, Ser. No. 781,598

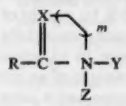
The portion of the term of this patent subsequent to Sep. 13, 1994, has been disclaimed.

Int. Cl.[2] C11D *1/38, 3/20, 3/26, 3/37*

U.S. Cl. 252—541 **7 Claims**

1. An aqueous composition useful for the removal of deposits accumulated during the manufacture of soft contact lenses which comprises:

a mixture of fatty acid amides of the formula



wherein one member of the mixture has *m* equal to 0, and the other member has *m* equal to 1, X being oxygen when *m* is 0 and nitrogen when *m* is 1, wherein the nitrogen to which Y and *z* is attached is positive;

R is an aliphatic group of from 9 to 13 carbon atoms;

Y is an aliphatically saturated group of from 2 to 4 carbon atoms and from 1 to 3 oxygen atoms, the oxygen atoms being present as oxy or non-oxo-carbonyl; and

Z is a saturated aliphatic group of from 2 to 3 carbon atoms and 1 to 2 oxygen atoms as oxy or non-oxo-carbonyl,

with the proviso that when *m* is 1, at least one of Y and Z have a non-oxo carbonyl functionality,

wherein the weight ratio of the two amides will be 0.5–2:1 and the concentration of each amide will be in the range of 2 to 10 weight %.

4,126,588

FLUORINATED CATION EXCHANGE MEMBRANE AND USE THEREOF IN ELECTROLYSIS OF ALKALI METAL HALIDE

Hiroshi Ukihashi, Tokyo; Tatsuro Asawa, Yokohama; Masaaki Yamabe, Machida; Tomoki Gunjima, Yokohama, and Haruhisa Miyake, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Dec. 28, 1976, Ser. No. 755,068

Claims priority, application Japan, Dec. 30, 1975, 50/157302; Mar. 29, 1976, 51/33486

Int. Cl.[2] C25B *1/10*

U.S. Cl. 521—31 **13 Claims**

1. A fluorinated cation exchange membrane which is made of a three component copolymer produced by copolymerizing a fluorovinylpolyether having the formula I

$$CF_2{=}CF{-}O{-}CF_2{-}(CFXOCF_2)_\alpha{-}(CFX')_\beta{-}(CF_2OCFX'')_\gamma{-}A$$

wherein α is 0 to 3; β is 0 to 6; γ is 0 to 4 and either α or γ is not 0; X, X' and X'' respectively represent —F or a $C_{1\text{-}5}$ perfluoroalkyl group; A represents —CN—, —COF, —COOH, —$COOR_1$, —COOM or —$CONR_2R_3$; R_1 represents a $C_{1\text{-}10}$ alkyl group preferably a $C_{1\text{-}3}$ alkyl group; R_2 and R_3 respectively represents hydrogen atom or a $C_{1\text{-}10}$ alkyl group; and M represents an alkali metal atom or a quaternary ammonium group, a fluorovinyl compound having the formula II

$$CF_2{=}CF{-}(O)_\delta{-}(CFY)_\gamma{-}A'$$

wherein δ is 0 to 1; γ is 1 to 6; Y represents —F or a $C_{1\text{-}5}$ perfluoroalkyl group; A' repesents —CN—, —COF, —COOH, —$COOR_1$, —COOM or —$CONR_2R_3$; and a fluorinated olefin having the formula III

$$CF_2{=}CZZ'$$

wherein Z and Z' respectively represent —H, —Cl, —F or —CF_3, and if necessary hydrolyzing the copolymer wherein said copolymer comprises 1 to 30 mole % fluorovinylpolyether (I) and fluorovinyl compound (II) and wherein the molar ratio of fluorovinylpolyether (I) to fluorovinyl compound (II) is from 0.1 to 5.0.

4,126,589

METHOD FOR PREPARATION OF CATION EXCHANGE MEMBRANES

Masato Hamada, Yokohama; Maomi Seko; Yasumichi Yamakoshi, both of Tokyo; Hirotsugu Miyauchi, and Fumihiko Yamamoto, both of Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 14, 1977, Ser. No. 851,481

Claims priority, application Japan, Nov. 15, 1976, 51/136244

Int. Cl.[2] B01D *3/00*

U.S. Cl. 521—31 **4 Claims**

1. A method for preparing a fluorocarbon cation exchange membrane, which comprises treating a fluorocarbon polymer membrane having at least some pendant groups of the formula: —$CF_2CF_2SO_2NH_2$ with anion radicals in an atmosphere free from oxygen and hydrolyzing the thus treated membrane.

4,126,590

SULPHONYLTETRAZOLES AS CHEMICAL BLOWING AGENTS

Hugo Illy, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

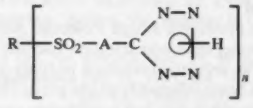
Filed Oct. 28, 1977, Ser. No. 846,286

Claims priority, application Switzerland, Nov. 5, 1976, 13967/76

Int. Cl.[2] C08J *9/10*

U.S. Cl. 521—89 **5 Claims**

1. Process for foaming high melting thermoplastic polymeric materials by the addition of 0.05 to 5% by weight of a sulphonyltetrazole of the formula I



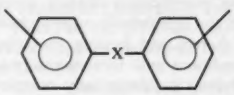
I

wherein

n is 1 or 2,

A represents an alkylene group which has 1–5 C atoms and which can be substituted by phenyl, and

R represents, if *n* is 1, alkyl having 1–4 C atoms, cyclohexyl, phenylalkyl having 7–8 C atoms, or an aryl group which has 6–10 C atoms and which can be substituted by alkyl having 1–2 C atoms, alkoxy having 1–2 C atoms, halogen, acylamino having 2–3 C atoms, carboxy or alkoxycarbonyl having 2–3 C atoms, and, if *n* is 2, represents phenylene, naphthylene or a radical of the formula II



II

wherein X can be a direct bond, —O—, —S—, —SO_2—, —CH_2—, —$C(CH_3)_2$— or —NH—, to the thermoplastic material, and then heating the mixture.

4,126,591

DIRECT SURFACE MODIFICATION OF PIGMENTS BY PLANT PHOSPHATIDES FOR THEIR SUSPENSION IN COATING COMPOUNDS

Max Kronstein, Bronx, N.Y., and Joseph Eichberg, Atlanta, Ga., assignors to American Lecithin Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 556,309, Mar. 7, 1975, Pat. No. 4,056,494. This application Apr. 7, 1977, Ser. No. 785,644

The portion of the term of this patent subsequent to Nov. 1, 1994, has been disclaimed.

Int. Cl.[2] C09D *3/54, 3/64, 5/02*

U.S. Cl. 260—22 A 47 Claims

1. In the production of pigmented filmforming compositions comprising finely divided pigment particles or mixtures of such pigment materials and a drying vehicle, where the finely divided pigment particles or mixtures of such pigment materials composed of units of widely varying specific gravities are held in uniform dispersion and readily kept fully redispersible when conglomerated during storage into a packed and otherwise poorly dispersible sedimentation the improvement which comprises either incorporating at least 4 percent to 10 percent of lecithin or modified lecithin into the pigmentation already predispersed in the vehicle, based on total pigmentation, said modification being achieved by bleaching or by hydroxylation of lecithin, or pre-treating the finely divided pigment particles with lecithin or modified lecithin first in order to provide polymer or heterophase phosphatide on the surface of the particles before said particles are mixed with the film-forming materials, so that repulsive conditions are obtained between different such particles, in order to facilitate dispersion of such particles and to avoid, when dispersed in fluid and after a storage period, their conglomeration into a packed and poorly dispersible sedimentation.

4,126,592

PROCESS FOR THE PREPARATION OF POLYESTERS HAVING STABILIZED MELT VISCOSITY IN THE PRESENCE OF AROMATIC POLY(CARBONATES)

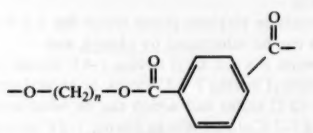
Willem F. H. Borman, Evansville, and Frank N. Liberti, Mount Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 16, 1976, Ser. No. 751,365

Int. Cl.[2] C08G *63/46, 63/48*

U.S. Cl. 260—22 M 12 Claims

1. A process for producing a high molecular weight linear thermoplastic polyester resin which is melt viscosity-stabilized in the presence of an aromatic carbonate or (poly-)carbonate, said polyester resin being selected from the group consisting of polymeric glycol terephthalate and isophthalate esters having repeating units of the general formula:



wherein n is a whole number of from 2 to 10, mixtures of such esters, said process comprising (i) adding a small, effective amount of a relatively non-volatile monofunctional ester-forming compound to an esterification mixture comprising the corresponding glycol and terephthalic or isophthalic acid or a reactive derivative thereof and heating the mixture under polyesterification conditions until formation of said melt viscosity stabilized polyester is substantially complete, and (ii) intimately blending the melt viscosity stabilized polyester resin with a flame retardant amount of a flame retardant additive comprising an aromatic (poly-) carbonate to produce a flame retarded polyester composition with stable melt viscosity.

4,126,593

RESIN COMPOSITION OF IMPROVED FLAME RETARDANCY AND MOLDABILITY

Hiroshi Takahashi, 46-17, Izumi 4-chome, Suginami-ku, Tokyo-to, Japan

Filed Oct. 18, 1976, Ser. No. 733,109

Claims priority, application Japan, Oct. 18, 1975, 50-125762; Mar. 10, 1976, 51-25959

Int. Cl.[2] C08J *3/20, 5/06, 5/10*

U.S. Cl. 260—23 R 9 Claims

1. A resin composition of substantially improved flame retardancy and moldability comprising a thermoplastic resin having uniformly admixed therewith finely divided material in an amount at least 40% by weight of said admixture and sufficient to render said resin substantially flame retardant up to about 95% by weight of said mixture, said thermoplastic resin being present in the amount of about 60–5% by weight of said mixture, said finely divided material consisting essentially of a powdery inorganic compound coated prior to its admixture with said resin with about 0.5–5% of its weight of an ester of a polyhydric alcohol of the neopentyl series and a saturated fatty acid having about 8–18 carbon atoms.

4,126,594

METHOD OF PROTECTING PLASTIC FILMS AGAINST ABRASION AND LACQUER FOR PERFORMING THE METHOD

Victor Peters, Windach-Schöffelding, and Franz Krammer, Friedberg, both of Fed. Rep. of Germany, assignors to Alkor GmbH Kunststoffverkauf, Munich, Fed. Rep. of Germany

Filed Nov. 15, 1976, Ser. No. 741,758

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1975, 2553354

Int. Cl.[2] C08L *61/28*

U.S. Cl. 260—29.4 UA 14 Claims

1. A lacquer suitable for protecting the surface of plastic film against abrasion consisting essentially of:

(a) 8 to 16 parts by weight of an acrylic polymer consisting essentially of repeating units selected from the group consisting of C_2H_3COOR and C_3H_6COOR, R being hydrogen, methyl, or ethyl, at least 1% and not more than 20% of said R being hydrogen;

(b) 2.5 to 10 parts by weight of methyl or ethyl ester of polymethacrylic acid;

(c) 5 to 10 parts by weight of a water-soluble, thermosetting melamine resin; and

(d) a volatile liquid medium consisting essentially of a mixture of water and an alkanol having up to three carbon atoms, said polymer, said ester, and said resin being uniformly dispersed in said medium.

4,126,595

AQUEOUS COATING COMPOSITIONS COMPRISING ACRYLIC OLIGOMERS, HIGH MOLECULAR WEIGHT POLYMERS AND CROSSLINKERS

Richard Martorano, Marlton, N.J., and William H. Brendley, Hatboro, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 17, 1975, Ser. No. 587,775

Int. Cl.[2] C08L *61/28, 63/00*

U.S. Cl. 260—29.4 UA 20 Claims

1. A thermosettable composition adapted for roller coating of substrates, comprising a binder consisting essentially of an aqueous alkaline blend of:

(A) a copolymer of (1) 3% to about 30% by weight of an olefinically unsaturated monomer containing a carboxyl group or mixture thereof, (2) at least one ester of acrylic or methacrylic acid and, optionally, (3) other vinyl monomers, the total of (1), (2) and (3) being 100%, the weight average molecular weight of the copolymer being between 10,000 and 500,000, in the form of a solution or a

colloidal solution in the aqueous blend as a salt of a volatile amine or ammonia;

(B) an oligomeric copolymer of (1) at least one ester of acrylic or methacrylic acid, (2) 9% to about 50% of an olefinically unsaturated monomer having at least one carboxyl group and, optionally, (3) other vinyl monomers, the total of (1), (2) and (3) being 100%, the weight average molecular weight of the copolymer being between 400 and 6,000, the molecular weight distribution is such that the heterogeneity index is 3 or less, in the form of a solution in the aqueous blend; and

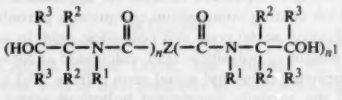
(C) a crosslinking agent selected from the group consisting of:

(a) an alcohol-modified aminoplast resin comprising the condensation product of an aldehyde and a compound selected from the group consisting of ureas, polyamides and triazines;

(b) a polyepoxide containing at least two vic-epoxy groups in which the epoxy oxygen atom is attached to adjacent carbon atoms;

(c) a polyaziridine containing at least two aziridinyl groups; and

(d) a β-hydroxyalkylamide of the formula:



containing at least two β-hydroxyalkylamide groups wherein

Z is a bond, hydrogen, a monovalent or polyvalent organic radical derived from a saturated or unsaturated alkyl containing from 1 to 60 carbon atoms, aryl, tri-lower alkylene amino or an unsaturated radical;

R^1 is hydrogen, lower alkyl or hydroxyalkyl;

R^2 and R^3 are selected from hydrogen, straight or branched chain lower alkyl, or an R^2 and an adjacent R^3 can be taken together to form a saturated cycloalkyl;

n is an integer of 1 or 2; and

n^1 is an integer of 0 to 2, and when n^1 is O and n has a value greater than 1, a polymer or copolymer formed from the β-hydroxyalkylamide when Z is an unsaturated radical,

in the form of a dispersion or solution in water; in the blend, on a solids basis, C) being from 5 to 50 percent by weight, A) plus B) being from 95 to 50 percent by weight, with A) being from 95 to 25 percent and B being from 5 to 75 percent by weight of the total of A) plus B), and the blend having a volatile aqueous phase comprising 70 to 95 percent by volume of water, and 5 to 30 percent by volume of volatile organic solvents, the composition having between 15 and 70 percent solids by weight, with a viscosity between 25 and 150 seconds measured in a Number 4 Ford Cup at 25° C.

4,126,596

TWO PACKAGE POLYMERIC EPOXY COMPOSITIONS HAVING IMPROVED POTLIFE

Karl F. Schimmel, Verona; James A. Claar, Export; Jerome A. Seiner, Pittsburgh, and Marco Wismer, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 23, 1977, Ser. No. 771,276

Int. Cl.[2] C08L *33/02, 63/02*

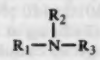
U.S. Cl. 260—29.6 NR **20 Claims**

1. A two-package polymeric composition comprising cocurable resinous components which consist essentially of:

(a) a polyepoxide having a 1,2-epoxy equivalence of greater than 1.0 and a molecular weight below about 4000; and

(b) an addition interpolymer containing a polymeric backbone of at least two interpolymerized, ethylenicallyunsaturated monomers, at least one of which contains carboxyl groups, and pendent thereto:

(1) anionic salt groups formed by reacting a part of said carboxyl groups with a sterically-hindered tertiary amine having the structure:



wherein R_1, R_2 and R_3 are each aliphatic or cycloaliphatic radicals having from 2 to 10 carbon atoms, and

(2) amine groups formed by reacting a part of said carboxyl groups with an alkylenimine;

said components (a) and (b) being interreactive to form a crosslinked, hard material.

4,126,597

SOLUTIONS OF POLYVINYL ACETALS

George A. Walrath, Scotia, and John T. Keating, Clifton Park, both of N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.

Filed Mar. 21, 1977, Ser. No. 779,550

Int. Cl.[2] C08F *16/34, 16/06;* **C08K** *5/05*

U.S. Cl. 260—33.2 R **59 Claims**

1. A solution containing at least 20% polyvinyl formal in a solvent comprising (1) a glycol ether of the formula

$$R_1O(C_2H_4O)_xH \quad (I)$$

where R_1 is alkyl of 1 to 2 carbon atoms and x is 2 or 3, or

$$R_2O(C_nH_{2n}O)_yH \quad (II)$$

where R_2 is phenyl, y is 1,2,3 or 4, and n is 2 or 3, with (2) a diluent in an amount of 5 to 90% when (1) has formula (I) and 0 to 90% when (1) has formula (II), the diluent being (a) selected from the group consisting of aromatic hydrocarbons, lower alkoxyethanol, lower alkoxyethyl acetate, lower alkyl acetate, lower alkanones, cyclohexanone, butoxyethoxyethanol and hexoxyethoxyethanol when (1) has formula (I) and the diluent being (a) or a lower alkanol or a compound of formula (I) when (1) has formula (II), the proportions of glycol ether and diluent being so regulated that a solution of the polyvinyl formal occurs.

4,126,598

CONCRETE ELECTRICAL INSULATOR

David H. Reighter, Roslyn, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Division of Ser. No. 679,056, Apr. 21, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,582

Int. Cl.[2] C08H *0/00*

U.S. Cl. 260—37 EP **9 Claims**

1. A mixture for preparing an improved electrical insulation grade concrete consisting essentially of aggregate and about 10–20% by weight based on the weight of the mixture of a binder consisting essentially of a water soluble, polar hydantoin epoxy resin.

4,126,599

WATER-RESISTANT SHAPED STRUCTURE OF GYPSUM AND PROCESS FOR PRODUCTION THEREOF

Yujiro Sugahara, Tokyo; Hiroyuki Naito, Tsuruoka; Tokio Okubo, Tsuruoka, and Nobuo Omori, Tsuruoka, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Osaka and Mitsubishi Corporation, Tokyo, both of, Japan

Filed Feb. 22, 1977, Ser. No. 770,432

Claims priority, application Japan, Feb. 26, 1976, 51-19463; Jul. 8, 1976, 51-80349

Int. Cl.[2] C08K *3/00*

U.S. Cl. 260—42.13 **16 Claims**

1. A water-resistant shaped structure of gypsum comprising (A) calcium sulfate dihydrate formed by hardening of calcium sulfate capable of hydration reaction, (B) a calcium type filler

for filling up spaces among crystalline particles of said calcium sulfate dihydrate and (C) a water-insoluble or hardly water-soluble calcium salt of a polybasic acid having a second stage dissociation constant of 10^{-3} to 10^{-10}, as measured at 25° C., said calcium type filler (B) being at least one calcium compound selected from the group consisting of calcium hydroxide, calcium carbonate, calcium silicate, calcium aluminosilicate, and non-water hardenable anhydrous gypsum and partially hydrated products thereof, wherein the amount of the calcium type filler (B) and the water-insoluble or hardly water-soluble calcium salt (C) is 15 to 75% based on the total amount of the components (A), (B) and (C) as calculated as calcium, the amount of the water-insoluble or hardly water-soluble calcium salt (C) is 1 to 30% based on the total amount of the components (A), (B) and (C) as calculated as calcium, the water-insoluble or hardly water-soluble calcium salt (C) is distributed predominantly in the surface portion of the shaped structure and is formed in situ in said shaped structure by reaction of said calcium type filler (B) with said polybasic acid or a water-soluble salt thereof, and said surface portion has a pore volume smaller than 0.50 ml/g in pores having a radius in the range of 75 to 75000 A and a pore volume smaller than 0.20 ml/g in pores having a radius in the range of 4000 to 10000 A.

7. A process for the production of water-resistant hardened shaped structures of gypsum comprising hardening a shaped structure comprising (A') calcium sulfate capable of hydration reaction, (B') a calcium type filler reactant in an amount of 17 to 300% based on said calcium sulfate (A') as calculated as calcium and (D) water in an amount sufficient to harden said calcium sulfate, the calcium type filler reactant (B') being calcium hydroxide, calcium carbonate, calcium silicate, calcium aluminosilicate, non-water-hardenable anhydrous gypsum or a mixture of calcium carbonate, calcium silicate, calcium aluminosilicate or non-water-hardenable anhydrous gypsum with calcium hydroxide, contacting the hardened shaped structure with an aqueous solution of a water-soluble polybasic acid or water-soluble salt thereof having a second stage dissociation constant of 10^{-3} to 10^{-10} as measured at 25° C. and thereby converting the calcium type filler reactant (B') so that (C) a water-insoluble or hardly water-soluble salt of said polybasic acid is formed in an amount of 0.1 to 30% based on the total components as calculated as calcium.

4,126,600
MULTICOMPONENT NITRILE RESIN-BLOCK COPOLYMER-POLYMER BLENDS

William P. Gergen, and Sol Davison, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 794,202, May 5, 1977, which is a continuation-in-part of Ser. No. 693,463, Jun. 7, 1976, abandoned. This application Apr. 13, 1978, Ser. No. 895,850
Int. Cl.[2] C08K *7/14;* **C08L** *51/00, 53/00*
U.S. Cl. 260—42.18 **17 Claims**

1. A composition comprising the admixture obtained by intimately mixing about 4 to about 40 parts by weight of a block copolymer, about 5 to about 48 parts by weight of at least one dissimilar engineering thermoplastic, and a nitrile barrier resin in a weight ratio of nitrile barrier resin to dissimilar engineering thermoplastic of greater than 1:1, so as to form a polyblend wherein at least two of the polymers have at least partial continuous interlocked networks with each other and wherein:

(a) said block copolymer comprises at least two monoalkenyl arene polymer end blocks A and at least one substantially completely hydrogenated conjugated diene polymer mid block B, said block copolymer having an 8 to 55 percent by weight monoalkenyl arene polymer block content, each polymer block A having an average molecular weight of between about 5,000 and about 125,000, and each polymer block B having an average molecular weight of between about 10,000 and about 300,000;

(b) said nitrile barrier resin has an alpha, betaolefinically unsaturated mononitrile content of greater than 50%, a generally crystalline structure, and a melting point over about 120° C.; and

(c) said dissimilar engineering thermoplastic resin is capable of forming a continuous structure and is selected from the group consisting of polyamides, saturated thermoplastic polyesters, and fluorinated thermoplastics wherein said saturated polyester has a molecular weight in excess of about 20,000, a melting point over about 120° C. and is selected from the group consisting of (i) the condensation product of a dicarboxylic acid and a glycol, (ii) polypivalolactone, and (iii) polycaprolactone.

4,126,601
ABRASION RESISTANT COATING COMPOSITIONS

George E. Cartier, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 7, 1977, Ser. No. 840,202
Int. Cl.[2] C08K *3/34, 5/54*
U.S. Cl. 260—42.27 **10 Claims**

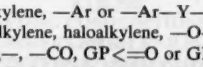
1. A coating composition suitable for application to a substrate which coating composition comprises a partially fluorinated polyvinyl acetal resin and polysilicic acid, in which the ratio by weight of polysilicic acid, calculated as SiO_2, to partially fluorinated polyvinyl acetal resin is from 1.5:1 to 5:1 and in which the partially fluorinated polyvinyl acetal contains from 0.1 to 10 percent by weight of fluorine.

4,126,602
AROMATIC POLYESTERS HAVING IMPROVED PROPERTIES

Gideon Salee, Williamsville, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,553
Int. Cl.[2] C08L *67/06*
U.S. Cl. 260—40 R **16 Claims**

1. A thermoplastic polymeric molding composition comprising, in admixture, (a) a linear aromatic polyester of components comprising a bisphenol and a dicarboxylic acid, where said carboxylic acid has the formula:



wherein Z is alkylene, —Ar or —Ar—Y—Ar—, where Ar is aromatic, Y is alkylene, haloalkylene, —O—, —S—, —SO—, $—SO_2—$, $—SO_3—$, —CO, GP<=O or GN<n is 0 or 1, and G is alkyl, haloalkyl, aryl, haloaryl, alkylaryl, haloalkylaryl, arylalkyl, haloarylalkyl, cycloalkyl, and halocycloalkyl, and (b) a rubber-modified copolymer comprising the reaction product of (1) a monovinyl alkenyl aromatic monomer containing up to 12 carbon atoms and having the alkenyl group attached directly to the benzene nucleus, said alkenyl aromatic compound being present in a proportion of from about 65 to about 85 parts by weight based on 100 parts by weight of said rubber-modified copolymer, and from about 10 to about 35 parts by weight of an unsaturated dicarboxylic anhydride readily copolymerizable therewith, and (2) from about 5 to about 35 parts by weight of a rubber in the form of a plurality of particles having diameters within the range of 0.02 to 30 microns dispersed throughout a matrix of the polymer of (1), at least a major portion of the rubber particles containing occlusions of the polymerization product of (1).

4,126,603

GLOSS-STABLE MODACRYLIC FIBRES

Günter Lorenz, Dormagen-Hackenbroich; Alfred Nogaj, Dormagen; Helmut Miller, Dormagen, and Hans Wilsing, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 21, 1976, Ser. No. 752,738

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1975, 2558384

Int. Cl.[2] C08F *28/00*

U.S. Cl. 526—240 2 Claims

1. A gloss-stable modacrylic fibre and filament comprising 50 to 84% of acrylonitrile, 15 to 48% of vinylidene chloride and 2 to 5% of an olefinically unsaturated sulphonic acid or salt thereof, all percentages being by weight, having a shrinkage in boiling water of at most 0.3%, a reduction in density on treatment with boiling water of no more than 0.015 g/cc and a scattered light component after boiling of at most 35 units compared with a $BaSO_4$ standard of 1000 units, the increase brought about by treatment with boiling water amounting to no more than 30 units.

4,126,604

TREATMENT OF TALL OIL FATTY ACIDS

John A. Alford, Goose Creek, and Michael W. Osborne, Charleston, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Feb. 11, 1976, Ser. No. 657,068

Int. Cl.[2] C09F *7/00*

U.S. Cl. 260—97.5 7 Claims

1. A process for upgrading the color and maintaining the color stability of tall oil fatty acids without changing the physical character of the fatty acids, which comprises;

(a) treating said fatty acids with from 50 to 200 parts per million iodine and elemental zinc metal in an amount from 0.01% to about 2.0% by weight of said fatty acids at a temperature from about 150° C. to 275° C.; and

(b) distilling the thus treated fatty acids and obtaining tall oil fatty acids having improved color and color stability.

4,126,605

PROCESS OF IMPROVING THE COMPATIBILITY OF GAMMA GLOBULINS

Waldemar Schneider, and Dietrich Wolter, both of Hagen, Fed. Rep. of Germany, assignors to Plasmaseco AG, Switzerland

Continuation-in-part of Ser. No. 644,749, Dec. 29, 1975, abandoned. This application May 31, 1977, Ser. No. 801,860

Int. Cl.[2] C07G *7/00;* A61K *39/00, 35/16*

U.S. Cl. 260—112 B 20 Claims

1. A process for preparing gamma globulin with improved intravenous compatibility comprising dissolving gamma globulin precipitated from blood or blood products in an aqueous solution containing a hyrocolloid, said hydrocolloid being capable of forming a lyophilic sol and said hydrocolloid being present at a level of from about 1 to about 30 percent by weight, precipitating and separating a first gamma globulin fraction containing undesirable materials from said solution by addition of an organic solvent thereto at a level of from about 8 to about 12 percent by weight, and thereafter precipitating a second gamma globulin fraction from said supernatant liquor of said first precipitation by addition of an organic solvent thereto at a level of from about 16 to about 24 percent by weight to obtain gamma globulin having improved intravenous compatibility, said aqueous solution containing said hydrocolloid being buffered and having a pH of from about 3.5 to about 8.0

4,126,606

PHYSIOLOGICALLY ACTIVE PEPTIDES AND A PROCESS FOR PREPARATION THEREOF

Hamao Umezawa, Tokyo; Takaaki Aoyagi, Fujisawa; Tomio Takeuchi, Tokyo, and Masa Hamada, Hoya, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Sep. 19, 1977, Ser. No. 834,635

Claims priority, application Japan, Oct. 4, 1976, 51/119089; Jul. 22, 1977, 52/88729

Int. Cl.[2] C07C *103/52;* C12K *1/04*

U.S. Cl. 260—112.5 R 9 Claims

1. Tetrapeptides of the formula:

X—Val—Val—Y I

wherein,

X represents 3-amino-2-hydroxy-5-methylhexanoyl residue or 3-amino-2-hydroxy-4-methylhexanoyl residue,

Val represents L-valyl residue, and

Y represents L-aspartic acid α-amide, L-aspartic acid or L-glutamic acid when X is 3-amino-2-hydroxy-5-methylhexanoyl residue, and L-glutamic acid α-amide or L-glutamic acid when X is 3-amino-2-hydroxy-4-methylhexanoyl residue, and

the amino group of the Val adjacent to X being acylated with the carboxyl group of the X to form an amide bond, the carboxyl group of said Val acylating the amino group of the other Val to form an amide bond and the carboxyl group of the other Val acylating the amino group of the Y to form an amide bond, and nontoxic, pharmaceutically acceptable salts thereof and N-acetylated derivatives thereof.

4,126,607

CASEIN DERIVATIVES AND METHOD OF PRODUCING THE SAME

William C. Eastin, Sebastopol, Calif., assignor to Chelsea Industries, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 327,726, Jan. 29, 1973, abandoned, which is a continuation of Ser. No. 49,517, Jun. 24, 1970, abandoned. This application Jan. 14, 1974, Ser. No. 433,007

Int. Cl.[2] A23J *1/20, 1/22*

U.S. Cl. 260—119 1 Claim

1. Edible calcium phospho-caseinates produced by the method consisting essentially of the steps of forming a slurry of casein in water by mixing about one part of casein in from about four to about six parts of water, separately adding thereto from about 1 to about 3% by weight, based upon the weight of the casein, of a member of the group consisting of the edible di-basic sodium and potassium salts of phosphoric acid, the edible tri-basic sodium and potassium salts of phosphoric acid, and the edible complex dehydration products of said salts, and an amount of calcium hydroxide to bring the pH of the mixture to 6.5–7.5, and heating and spray drying the mixture.

4,126,608

PROCESS FOR THE PRODUCTION OF SALTS OF STILBENE-AZO AND STILBENE-AZOXY DYES

Reinhard Pedrazzi, Basel, Switzerland, assignor to Fidelity Union Trust Company as Executive Trustee under the Sandoz Trust, Newark, N.J.

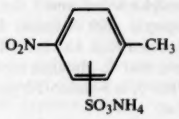
Division of Ser. No. 385,756, Aug. 6, 1973, Pat. No. 3,953,419, which is a continuation-in-part of Ser. No. 338,321, Mar. 5, 1973, abandoned, and a continuation-in-part of Ser. No. 338,339, Mar. 5, 1973, abandoned. This application Dec. 17, 1975, Ser. No. 641,484

Claims priority, application Switzerland, Mar. 17, 1972, 4042/72; Aug. 8, 1972, 11699/72; Mar. 9, 1972, 1477/72

Int. Cl.[2] C09B *27/02*

U.S. Cl. 260—143 **25 Claims**

1. A process for the production of a stilbene-azo or stilbene-azoxy dye, or a mixture of such dyes, comprising condensing a compound of the formula



in the presence of a tetra(alkyl or substituted alkyl)ammonium or alkali metal hydroxide, whereby a stilbene-azo or stilbene-azoxy dye containing at least one sulfo group per molecule wherein at least one cation per molecule is ammonium and every other cation is independently a tetra(alkyl or substituted alkyl)ammonium or alkali metal cation, or a mixture of such dyes, is produced.

4,126,609

AZO DYESTUFF WITH A FIBER-REACTIVE GROUP ATTACHED TO A NAPHTHALENE SULPHONIC ACID COMPONENT

Horst Jäger, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

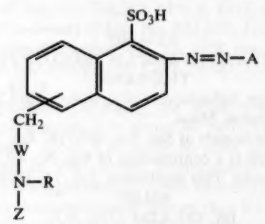
Filed Jul. 3, 1973, Ser. No. 376,184

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1972, 2232541

Int. Cl.[2] C09B *62/08, 62/24, 62/40;* D06P *1/382*

U.S. Cl. 260—153 **6 Claims**

1. Azo reactive dyestuff which in the acid form corresponds to the formula

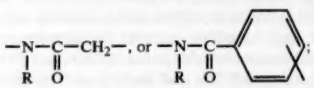


wherein

Z is a fiber-reactive group capable of reacting under dyeing or printing conditions with hydroxy or amino to form a covalent bond;

A is the radical of a coupling component;

W is a direct bond,



and

R is hydrogen or lower alkyl.

4,126,610

PROCESS FOR THE PREPARATION OF CYANO AZO DYESTUFFS

Gerard L. A. Belfort, Oissel, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Apr. 4, 1977, Ser. No. 784,384

Claims priority, application France, Apr. 9, 1976, 7610421

Int. Cl.[2] C09B *43/00*

U.S. Cl. 260—205 **19 Claims**

1. A process of manufacture of a cyano-azo dye which is insolubie in water and has the formula:

$$(CN)_n - A - N = N - B \qquad (I)$$

starting from a halogen-azo compound of formula:

$$(Hal)_n - A - N = N - B \qquad (II)$$

in which formula A denotes a benzenoid radical containing at least one cyano or halogen substituent in ortho position with respect to the azo group;

Hal represents halogen;

B denotes the residue of a coupling agent;

A and B are devoid of groups conferring solubility in water and may contain other substituents for azo dyestuffs;

n is 1 or 2 wherein a compound of formula (II) is reacted with an alkali cyanide in the presence of water and in the presence of a sulfide solvent of the formula:

$$NC - R - S - (R')_m - CN \qquad (III)$$

in which R and R′ which may be the same or different, denote alkylene having from 1 to 6 carbons and having a straight or branched chain which may contain a —O— or —S— bridge and *m* is 0 or 1, and in the presence of a catalyst formed by a molecular combination between the sulfide of formula (III) and a cuprous salt.

4,126,611

SUBSTITUTED CYCLOALKYL LACTAMIMIDES

Johann M. Grisar; Thomas R. Blohm, and Edward M. Roberts, all of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

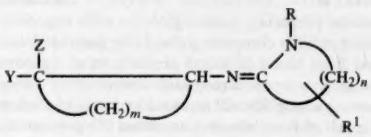
Division of Ser. No. 386,995, Aug. 9, 1973, which is a continuation-in-part of Ser. No. 143,259, May 13, 1971, abandoned. This application Feb. 14, 1978, Ser. No. 877,663

Int. Cl.[2] C07D *207/22, 211/72, 223/12, 225/02*

U.S. Cl. 260—239 B **7 Claims**

1. A compound selected from

(A) a compound of the formula



or

(B) a pharmaceutically acceptable acid addition salt thereof, wherein Y is selected from the group consisting of phenyl or substituted phenyl wherein the substituents on the substituted phenyl are selected from the group consisting of halogen, lower alkyl of from 1 to 4 carbon atoms or lower alkoxy of from 1 to 4 carbon atoms; Z is hydrogen; R is selected from the group consisting of hydrogen, lower alkyl of from 1 to 4 carbon atoms, phenyl or benzyl; R^1 is selected from the group consisting of hydrogen, halogen or lower alkyl of from 1 to 4 carbon atoms, *m* is

an integer of from 3 to 6; and *n* is an integer of from 3 to 11.

4,126,612

SUBSTITUTED CYCLOALKYL LACTAMIMIDES

Johann M. Grisar; Thomas R. Blohm, and Edward M. Roberts, all of Cincinnati, Ohio, assignors to Eugene O. Retter and Richardson-Merrell Inc., Wilton, Conn.

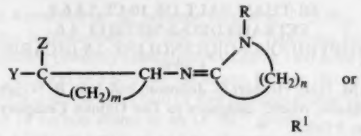
Division of Ser. No. 386,995, Aug. 9, 1973, which is a continuation-in-part of Ser. No. 143,259, May 13, 1971, abandoned. This application Feb. 14, 1978, Ser. No. 877,664

Int. Cl.[2] C07D *207/22, 211/72, 223/12, 225/02*

U.S. Cl. 260—239 B **3 Claims**

1. A compound selected from

(A) a compound of the formula



or

(B) a pharmaceutically acceptable acid addition salt thereof, wherein Y is selected from the group consisting of phenyl or substituted phenyl wherein the substituents on the substituted phenyl are selected from the group consisting of halogen, lower alkyl of from 1 to 4 carbon atoms or lower alkoxy of from 1 to 4 carbon atoms; Z is hydroxy; R is selected from the group consisting of hydrogen, lower alkyl of from 1 to 4 carbon atoms, phenyl or benzyl; R^1 is selected from the group consisting of hydrogen, halogen or lower alkyl of from 1 to 4 carbon atoms; *m* is an integer of from 3 to 6; and *n* is an integer of from 3 to 11.

4,126,613

SUBSTITUTED CYCLOALKYL LACTAMIMIDES

Johann M. Grisar; Thomas R. Blohm, and Edward M. Roberts, all of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

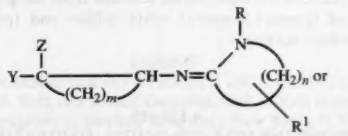
Continuation-in-part of Ser. No. 143,259, May 13, 1971, abandoned. This application Aug. 9, 1973, Ser. No. 386,995

Int. Cl.[2] C07D *207/22, 211/72, 223/00, 225/00*

U.S. Cl. 260—239 B **5 Claims**

1. A compound selected from

(A) a compound of the formula



(B) a pharmaceutically acceptable acid addition salt thereof, wherein Y is selected from the group consisting of cycloalkyl of from 5 to 7 carbon atoms; Z is hydrogen; R is selected from the group consisting of hydrogen, lower alkyl of from 1 to 4 carbon atoms, phenyl or benzyl; R^1 is selected from the group consisting of hydrogen, halogen or lower alkyl of from 1 to 4 carbon atoms; *m* is an integer of from 3 to 6; and *n* is an integer of from 3 to 11.

4,126,614

OXACAPROLACTAMS

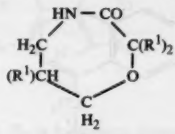
Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 826,490, Aug. 22, 1977, abandoned. This application Mar. 27, 1978, Ser. No. 890,360

Int. Cl.[2] C07D *267/12, 273/00*

U.S. Cl. 260—239.3 R **10 Claims**

8. A compound of the formula



wherein each R^1 is hydrogen or methyl.

10. 3,10-dioxa-7,14-diazacyclotetradecane-1,8-dione.

4,126,615

PROCESS FOR THE MANUFACTURE OF PURE ISOQUINOLINE DERIVATIVES

Istvan Turcsan; Istvan Jelinek; Jozsef Ugrics; Istvan Csik; Eva Somfai, and Iren Csaszar nee Toth, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT, Budapest, Hungary

Filed Dec. 7, 1976, Ser. No. 748,221

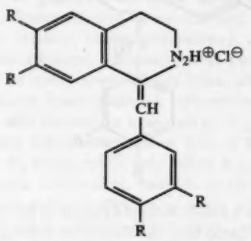
Claims priority, application Hungary, Dec. 12, 1975, CI 1628; Dec. 12, 1975, CI 1629

Int. Cl.[2] C07D *217/20*

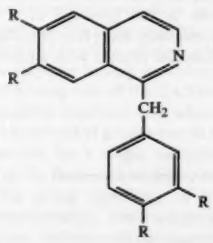
U.S. Cl. 542—449 **4 Claims**

1. In a process for the manufacture of isoquinoline derivatives of the formulae IA and IB

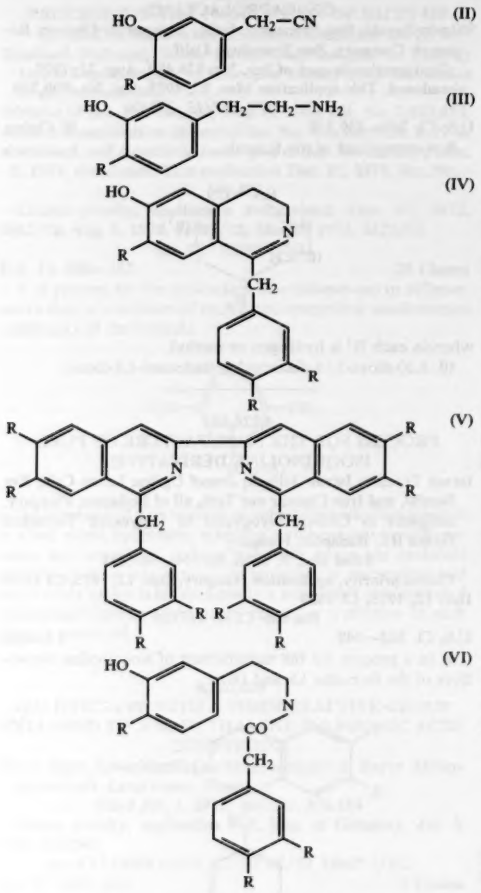
(IA)



(IB)



wherein R is methoxy or ethoxy, by steps which include chloromethylating a di-R-benzene, reacting the 1,2-di-R-4-chloromethyl-benzene thus obtained with an alkali metal cyanide, thereafter hydrogenating the product obtained in the presence of ethanol and a Raney-nickel catalyst, reacting the 3,4-di-R-phenyl-ethylamine thus obtained with 3,4-di-R-phenyl-acetic acid, and cyclizing the N-(3',4'-di-R-phenyl-acetyl)-3,4-di-R-phenyl-ethylamine in the presence of phosphorous oxychloride, the improvement which comprises suppressing the formation of the compounds of the formulae II, III, IV, and VI



by fractionating a 3,4-di-R-benzyl-cyanide in the presence of an acid-binding organic base and thereafter hydrogenating the 3,4-di-R-benzyl-cyanide in the presence of a Raney-nickel catalyst, which was previously made free of sodium hydroxide with aqueous extraction and treated with ammonium carbonate.

4,126,616

N-PROPYLNORAPOMORPHINE DIESTERS

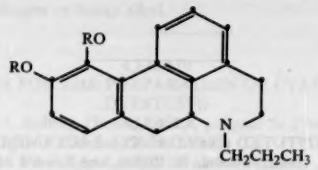
William Banks Hinshaw, Sand Lake, and Jack Pearl, Bethlehem, both of N.Y., assignors to William B. Hinshaw, New York, N.Y.

Continuation-in-part of Ser. No. 630,722, Nov. 10, 1975, abandoned. This application Dec. 13, 1976, Ser. No. 749,721

Int. Cl.[2] C07D *215/20, 215/22*

U.S. Cl. 546—75 **19 Claims**

1. A member of the group consisting of (A) compounds having the formula:



where R is alkanoyl having from two to 20 carbon atoms; benzoyl or benzoyl substituted by from one to three halogen atoms or by from one to three methyl or methoxy groups; or cyclopropanecarbonyl and (B) pharmaceutically acceptable acid-addition salts thereof.

4,126,617

DI-THAM SALT OF 10-CL,1,4,6,9 TETRAHYDRO-5-METHYL 4,6 DIOXOPYRIDO[3,2-G]QUINOLINE-2,8-DICARBOXYLATE

Charles M. Hall; Herbert G. Johnson, and John B. Wright, all of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 531,760, Dec. 11, 1974, abandoned, which is a division of Ser. No. 303,971, Nov. 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 233,772, Mar. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,034, Feb. 28, 1972, abandoned. This application Aug. 5, 1976, Ser. No. 712,124

Int. Cl.[2] C07D *487/04*

U.S. Cl. 546—81 **1 Claim**

1. Di-tris(hydroxymethyl)methylammonium-10-chloro-1,4,6,9-tetrahydro-5-methyl-4,6-dioxopyrido[3,2g]guinoline-2,8-dicarboxylate.

4,126,618

ETHYL OR ACETYL DERIVATIVES OF 2-PYRIDYLMETHANETHIOL

Max Winter, Petit-Lancy; Fritz Gautschi, Commugny; Ivon Flament, and Max Stoll, both of Petit-Lancy, all of Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 615,748, Sep. 22, 1975, Pat. No. 4,085,109, which is a division of Ser. No. 482,819, Jun. 24, 1974, Pat. No. 4,038,435, which is a division of Ser. No. 243,866, Apr. 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sep. 8, 1970, Pat. No. 3,702,253, which is a continuation-in-part of Ser. No. 543,069, Apr. 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, Apr. 30, 1965, abandoned. This application Feb. 3, 1978, Ser. No. 874,736

Int. Cl.[2] C07D *213/32*

U.S. Cl. 546—339 **3 Claims**

1. Pyridine sulfur compounds selected from the group consisting of (pyridyl-2)-methyl ethyl sulfide and (pyridyl-2)-methanethiol acetate.

4,126,619

CROSSLINKABLE BIS-IMIDYL DERIVATIVES

Roland Darms, Therwil; Vratislav Kvita, Muttenz, and Gerd Greber, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

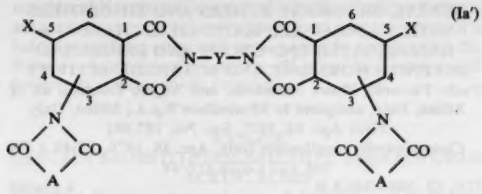
Filed Dec. 6, 1976, Ser. No. 747,443

Claims priority, application Switzerland, Dec. 19, 1975, 16510/75

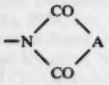
Int. Cl.[2] C07D *209/34*

U.S. Cl. 260—326 C **10 Claims**

1. A crosslinkable compound of the formula


(Ia')

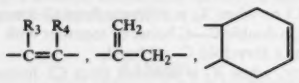
wherein the Xs independently of one another represent hydrogen, or if the radical

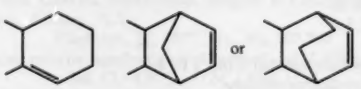


is in the 4-position of the benzene ring, also $-COR_2$,

the R_2s independently of one another represent hydroxyl, phenoxy; phenoxy substituted by one or two nitro groups, by one alkyl of 1 to 2 carbon atoms, by one alkoxy of 1 to 2 carbon atoms or by two or five halogen atoms; alkoxy of 1 to 18 carbon atoms or an O^-M^+ group,

the A s independently of one another represent a radical of the formula





R_3 and R_4 independently of one another represent hydrogen, chlorine, bromine or methyl,

M^+ represents an alkali metal cation, a trialkylammonium cation having 3 to 24 carbon atoms or a quaternary ammonium cation, and

Y represents alkylene of 2 to 10 carbon atoms, 1,3-phenylene, 1,4-phenylene, the 4,4'-diphenylmethane group, the 4,4'-diphenylsulfone group or the 4,4'-diphenyl ether group.

4,126,620

CYCLOPENTA (C) PYRROLE DERIVATIVES

Malcolm R. Bell, and Rudolf Oesterlin, both of East Greenbush, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

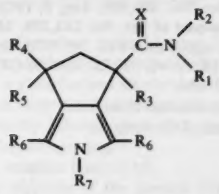
Continuation-in-part of Ser. No. 703,949, Jul. 9, 1976, which is a division of Ser. No. 558,807, Mar. 17, 1975, Pat. No. 4,008,250, which is a continuation-in-part of Ser. No. 346,005, Mar. 29, 1973, Pat. No. 3,928,380. This application Feb. 25, 1977, Ser. No. 772,003

Claims priority, application United Kingdom, Mar. 31, 1976, 8385/76

Int. Cl.[2] C07D *209/02, 403/06*

U.S. Cl. 260—326.25 **60 Claims**

1. A compound having the formula:



where X is O or S; R_1 is hydrogen, lower-alkyl or di-lower-alkylamino-lower-alkyl; R_2 is hydrogen or lower-alkyl; each of R_3, R_4 and R_5 is hydrogen or methyl; each R_6 group is the same or different hydrogen, formyl and lower-alkane-1,3-diol ketals thereof, phenyl-lower-alkyl, carboxy, carbo-lower-alkoxy, carbo-lower-alkoxy-lower-alkyl, carbo-lower-alkoxy-lower alkenyl, carboxy-lower-alkyl, carboxy-lower-alkenyl, methyl, lower-alkenyl or a group of the formula:

where R_8 is hydrogen, lower-alkyl, lower-alkenyl, lower-alkynyl, phenyl or phenyl-lower-alkyl; R_9 is hydrogen, cyano, lower-alkyl, lower-alkenyl, lower-alkynyl, phenyl, phenyl-lower-alkyl, carboxy, carbo-lower-alkoxy, carbamyl, aminomethyl, lower-alkanoyl, trichloromethyl, carbo-lower-alkoxy-lower-alkyl or carbo-lower-alkoxy-lower-alkynyl; R_{10} is hydrogen, benzoyl, lower-alkanoyl, carboxy-lower-alkanoyl and ammonium salts thereof, or lower-alkyl, R_{10} being other than hydrogen only when either one or both of R_8 and R_9 are hydrogen and R_9 being cyano only when R_{10} is hydrogen; and R_7 is hydrogen, lower-alkyl, halo-lower-alkyl, lower-alkenyl, lower-alkynyl, di-lower-alkylamino-lower-alkyl, carbo-lower-alkoxy-lower-alkyl, carboxy-lower-alkyl, carboxamido-lower-alkyl, thiocarboxamido-lower-alkyl, lower-alkoxy-lower-alkyl, hydroxy-lower-alkyl, lower-alkythio-lower-alkyl, cycloalkyl, cycloalkyl-lower-alkyl, phenyl, phenyl-lower-alkyl, or divalent-lower-alkylene having its valences on different carbon atoms and joining two of the 2,4,5,6-tetrahydrocyclopenta[c]pyrrole moieties together, and wherein the phenyl, benzoyl or phenyl-lower-alkyl groups can be further substituted in the phenyl nucleus by a single methylene-dioxy or lower-alkoxy group or by from one to three, the same or different, members of the group consisting of lower-alkyl, halogen, hydroxy, trifluoromethyl, lower-alkanoylamino, amino, di-lower-alkylamino, di-lower-alkylaminomethyl, carboxy, carboxamido, carbo-lower-alkoxy, lower-alkylmercapto, lower-alkylsulfinyl, lower-alkylsulfonyl, nitro and sulfamoyl, and wherein lower-alkyl and lower-alkoxy, each occurrence, contains from one to four carbon atoms; lower-alkane, lower-alkenyl and lower-alkynyl, each occurrence, contain from three to six carbon atoms; lower-alkanoyl, each occurrence, contains from two to five carbon atoms, and lower-alkylene, each occurrence, contains from one to eight carbon atoms, except that both R_6 groups are not simultaneously hydrogen and further except that when R_7 is unsubstituted phenyl and R_6 at the 3-position and R_8 are both hydrogen, R_9 is not unsubstituted-phenyl.

4,126,621

SUBSTITUTED CYCLOALKYL LACTAMIMIDES

Johann M. Grisar; Thomas R. Blohm, and Edward M. Roberts, all of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

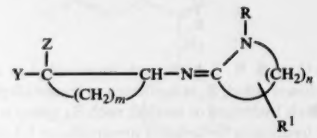
Division of Ser. No. 386,995, Aug. 9, 1973, which is a continuation-in-part of Ser. No. 143,259, May 13, 1971, abandoned. This application Feb. 14, 1978, Ser. No. 877,652

Int. Cl.[2] A61K *31/40, 31/55, 31/445;* C07D *409/08*

U.S. Cl. 260—329 AM 4 Claims

1. A compound selected from

(A) a compound of the formula



(B) a pharmaceutically acceptable acid addition salt thereof, wherein Y is thienyl; Z is hydrogen or hydroxy; R is selected from the group consisting of hydrogen, lower alkyl of from 1 to 4 carbon atoms, phenyl or benzyl; R^1 is selected from the group consisting of hydrogen, halogen or lower alkyl of from 1 to 4 carbon atoms; *m* is an integer of from 3 to 6; and *n* is an integer of from 3 to 11.

4,126,622

BICYCLIC LACTONE DERIVATIVES EMPLOYED AS INTERMEDIATES IN THE SYNTHESIS OF PROSTAGLANDINES

István Tömösközi; Gábor Kovács, both of Budapest; István Székely, Szentendre; Vilmos Simonidesz, Budapest; Marianna Lovász née Gáspár, Budapest; Borbála Keresztes née Ördög, Budapest; Julia Remport née Rádóczi, Budapest; István Stadler, Budapest; Zsuzsa Visky née Gombos, Budapest, and Csaba Szántay, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT, Budapest, Hungary

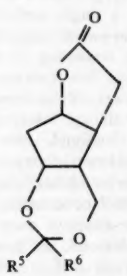
Filed Feb. 22, 1977, Ser. No. 770,998

Claims priority, application Hungary, Feb. 20, 1976, CI 1644

Int. Cl.[2] C07D *319/08*

U.S. Cl. 260—340.3 4 Claims

1. A compound of the formula:



wherein R^5 and R^6 are selected from the group consisting of hydrogen, methyl and phenyl with the proviso that when one of R^5 and R^6 is phenyl, the other must be hydrogen.

4,126,623

BENZYL OR PHENYL ETHERS AND THIOETHERS WITH A LINEAR ALIPHATIC CHAIN HAVING A HALOGENATED END GROUP AND EXHIBITING JUVENILE HORMONE AND ACARICIDE ACTIVITY

Paolo Piccardi; Pietro Massardo, and Angelo Longoni, all of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

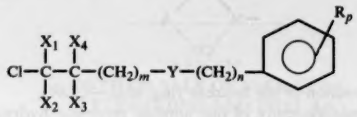
Filed Apr. 14, 1977, Ser. No. 787,491

Claims priority, application Italy, Apr. 15, 1976, 22349 A/76

Int. Cl.[2] C07D *317/44*

U.S. Cl. 260—340.5 R 4 Claims

1. Phenyl or thio- ethers having both juvenile hormone and acaricide action, characterized in comprising a linear aliphatic chain with a halogenated end group and being of the general formula



(I)

wherein:

X_1 = H, F, Cl, or together with X_2, X_3 and X_4 represents a threefold C—C bond;

X_2 = Cl or, when X_1 is different from Cl, represents, together with X_3 or with X_4, a double C—C bond; or, together with X_1, X_2 and X_4 represents a three-fold C—C bond;

X_3 = H, Cl or when X_1 is different from Cl forms, together with X_2, a double C—C bond; or together with X_1, X_2 and X_4 forms a threefold C—C bond;

X_4 = H; or, when X_1 is different from Cl, forms, together with X_2, a double C—C bond; or, together with X_1, X_2 and X_3 forms a threefold C—C bond;

Y = O, S;

m = 3,5,7;

n = 0, 1;

p = a whole number from 1 to 4;

R = 3,4-dioxymethylene.

4,126,624

PREPARATION OF GAMMA-PYRONES FROM 3-SUBSTITUTED FURANS

Thomas M. Brennan, Old Lyme; Daniel P. Brannegan, Pawcatuck; Paul D. Weeks, and Donald E. Kuhla, both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

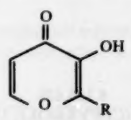
Filed Nov. 12, 1976, Ser. No. 741,348

The portion of the term of this patent subsequent to Apr. 4, 1995, has been disclaimed.

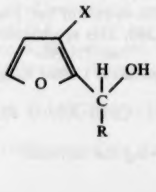
Int. Cl.[2] C07D *309/22*

U.S. Cl. 260—345.9 R 12 Claims

1. A process for preparing a gamma-pyrone of the formula



which comprises contacting a 3-substituted furfuryl alcohol of the formula



wherein R is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or benzyl and X is chloro, bromo, iodo or alkoxyl of 1 to 4 carbon atoms, in aqueous solutions with at least one equivalent of a halogen oxidant, a peracid or a peroxide and heating the formed 4-substituted-6-hydroxy-2H-pyran-3(6H)-one until hydrolysis is substantially complete.

4,126,625

CERTAIN 5-SUBSTITUTED-3-METHYL-2-BENZOFURAN ACETIC ACIDS

Shigetaka Yoshina, deceased, late of Aichi, Japan; by Teruko Yoshina, legal heir, Nagoya, Japan; Tsutomu Kameyama, Nagoya, Japan; Yoshimasa Oiji, Sakai, Japan, and Akira Kiyohara, Nishinomiya, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Ohtemachi, Japan

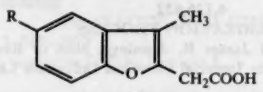
Filed Jul. 12, 1976, Ser. No. 704,604

Claims priority, application Japan, Jul. 1, 1975, 50-84997; Jul. 1, 1975, 50-84998; United Kingdom, Nov. 12, 1975, 46749/75

Int. Cl.[2] C07D *307/80*

U.S. Cl. 260—346.22 **5 Claims**

1. A compound of the formula



wherein R is a member of the group consisting of ethyl, n-propyl, isopropyl, n-butyl, sec-butyl or tert-butyl; and physiologically acceptable salts thereof.

4,126,626

1-NITROARYLAMINO-5 OR 8-PHENOXY OR PHENYLMERCAPTO ANTHRAQUINONE

Max Jost, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

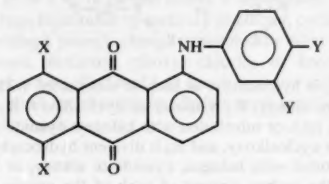
Filed Jun. 20, 1977, Ser. No. 807,952

Claims priority, application Switzerland, Jul. 2, 1976, 8503/76

Int. Cl.[2] C07C *97/24;* **C09B** *1/32*

U.S. Cl. 260—378 **6 Claims**

1. An arylaminoanthraquinone of the formula



wherein one X is phenoxy or phenylmercapto which are unsubstituted or substituted by halo, alkyl of 1–4 carbon atoms or alkoxy of 1–4 carbon atoms, the other X is hydrogen, one Y is nitro and the other Y is hydrogen.

4,126,627

PROCESS FOR PREPARING ALKALINE EARTH METAL MERCAPTIDES

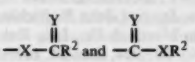
Gerald H. Reifenberg, East Windsor, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 6, 1978, Ser. No. 875,271

Int. Cl.[2] C11C *3/00;* **C07C** *149/06, 149/28, 149/30*

U.S. Cl. 260—399 **11 Claims**

1. A process for preparing alkaline earth metal mercaptides of the general formula $M(SR)_2$, wherein M is selected from the group consisting of barium, strontium, and calcium and R is a hydrocarbon radical having from 1 to 22 carbon atoms and is selected from the group consisting of alkyl, cycloalkyl, aryl and mixed alkyl-aryl, said hydrocarbon radicals can optionally have a noninterfering substituent selected from the group consisting of halogen, —XH, $-XR^2$,



where R^2 is a hydrocarbon radical having from 1–20 carbon atoms and is selected from the group consisting of alkyl, alkenyl, cycloalkyl, aryl and mixed alkylaryl with the proviso that R^2 may be further substituted with inert substituents and X and Y are independently selected from the group consisting of oxygen and sulfur, comprising:

(1) forming a reaction mixture of:

(a) a metal alkoxide of the general formula $M^1(OR^1)_x$, wherein M^1 is selected from the group consisting of magnesium, aluminum or calcium with the proviso that when M^1 is calcium M is barium or strontium; R^1 is a hydrocarbon radical having from 1–20 carbon atoms and selected from the group consisting of alkyl, cycloalkyl, or aralkyl with the proviso that the hydrocarbon radical can be substituted with inert or noninterfering substituents: and x is a number equal to the valence of M^1: and

(b) a metal oxide or hydroxide of the formula MO, or $M(OH)_2$, wherein M is selected from the group consisting of barium, strontium or calcium; and

(c) an alcohol of the general formula R^1OH wherein R^1 is as above defined:

(2) subjecting the reaction mixture of (1) to reaction conditions that include heating the mixture for sufficient time to provide $M^1(OH)_x$ and a metal alkoxide of the general formula $M(OR^1)_2$;

(3) forming a reaction mixture of: (a) the metal alkoxide $M(OR^1)_2$ of step (2), and (b) a mercaptan of the general formula RSH, wherein R is as above defined;

(4) subjecting the mixture of (3) to reaction conditions to provide the alkaline earth metal mercaptide of the general formula $M(SR)_2$; and then

(5) separating the metal mercaptide $M(SR)_2$ from the mixture of step (4).

4,126,628

ACYLATION OF AMINO ACIDS

Alenka M. Paquet, Ottawa, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Mar. 28, 1977, Ser. No. 781,797

Int. Cl.[2] C11C *3/00;* **C07C** *103/52, 101/24, 101/26*

U.S. Cl. 260—404.5 **12 Claims**

1. A method for monoacylation of diamino acids, the acyl group being selected from carboxylic acid and substituted carbonic acid moieties, the acylation occurring preferentially at the terminal amino group remote from the carboxyl group of the amino acid, comprising

(a) preparing the succinimidyl ester of the selected carboxylic or alkyl or aralkyl carbonic acid;

(b) reacting, in the presence of a basic catalyst to give a pH of at least about 10 or equivalent high basicity, said succinimidyl ester with the diamino acid, its ester or oligopeptide thereof the amount of basic catalyst or pH being high enough to form the amide linkage between the terminal amino group and the acid without significant acylation of the other unprotected amino group, in an inert liquid medium; and

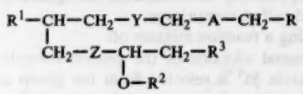
(c) recovering the N-acyldiamino acid, ester or oligopeptide thereof as product.

4,126,629
SUBSTITUTED PHENOXY-TRIDECENOIC ACIDS/ESTERS

Edward J. Cragoe, Jr., and John B. Bicking, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 587,924, Jun. 18, 1975, Pat. No. 4,020,177, which is a continuation-in-part of Ser. No. 502,126, Aug. 30, 1974, abandoned. This application Sep. 9, 1976, Ser. No. 721,733
Int. Cl.[2] C09F *5/00;* C11C *3/00*
U.S. Cl. 260—405 16 Claims

1. The compound of the formula



wherein

R is selected from the group consisting of carboxy and a carboxy salt, alkoxycarbonyl (—COOAlk) wherein Alk is alkyl having 1–10 carbon atoms;

R^1 is selected from the group consisting of acetyl, propionyl, 1-hydroxyethyl, 1-hydroxypropyl, and hydroxymethyl;

R^2 is hydrogen;

R^3 is O-R^6 or S-R^6 wherein R^6 is phenyl, substituted phenyl,

where X is halogen, trifluoromethyl, lower alkyl, lower alkoxy, dimethylamino, nitro, mesyl, lower alkanoyl and the like attached o, m, or p, and n is 1 or 2;

A is methylene (—CH_2—);

Y is selected from the group consisting of ethylene, vinylene , or ethynylene; and

Z is selected from the group consisting of ethylene, vinylene, or ethynylene;

provided that at least one of the substitutents Y or Z are selected from vinylene or ethynylene.

6. The compound of claim 1 wherein R^1 is selected from acetyl and propionyl.

9. The compound of claim 6 wherein Y is vinylene or ethynylene.

10. The compound of claim 9 which is 8-acetyl-12-hydroxy-13-(4-fluorophenoxy)-5-tridecynoic acid.

4,126,630
PROCESS FOR PREPARING OXIME CONTAINING SILICON COMPOUNDS

Horst Müller, Emmerting; Edgar Schmidt, Burghausen; Volker Frey, Burghausen, and Rudolf Riedle, Burghausen, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Mar. 16, 1978, Ser. No. 887,168
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1977, 2719008
Int. Cl.[2] C07F *7/10*
U.S. Cl. 260—448.2 E 5 Claims

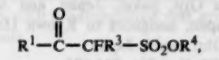
1. A process for preparing oxime containing silicon compounds which comprises reacting an oxime with a silicon compound having at least three nitrogen atoms linked to the same silicon atom of said compound through Si—N bonding at a temperature of from about 0° to 150° C.

4,126,631
β-CARBONYLPOLYFLUOROALKYL SULFONATE ESTERS

Carl G. Krespan, and Bruce E. Smart, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 602,757, Aug. 7, 1975, abandoned. This application Mar. 8, 1977, Ser. No. 775,596
Int. Cl.[2] C07C *143/68;* C08F *4/00*
U.S. Cl. 260—456 F 5 Claims

1. A β-carbonylpolyfluoroalkyl sulfonate ester of the formula



wherein:

R^1 and R^3 are fluorine or perfluoroalkyl of up to 8 carbons provided that R^1 and R^3 are not both fluorine; and

R^4 is methyl or ethyl.

4,126,632
DIMERIZATION PROCESS

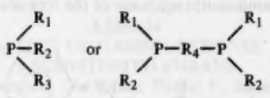
Philip J. Hogan, and James R. Jennings, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 28, 1976, Ser. No. 736,498
Claims priority, application United Kingdom, Oct. 31, 1975, 45324/75; Dec. 24, 1975, 52888/75
Int. Cl.[2] C07C *120/00, 121/20*
U.S. Cl. 260—465.8 D 9 Claims

1. A process for the dimerisation of acrylonitrile to obtain a product which is predominantly 1,4-dicyano-butenes, comprising:

dissolving acrylonitrile in an organic solvent capable of donating protons but substantially unreactive with respect to acrylonitrile and organic phosphorus (III) compounds, and

contacting acrylonitrile with an organic phosphorus (III) compound having the formula:



where R_1 is hydrocarbyl as such or substituted with halogen, cyanide or alkoxy, R_2 is alkoxy or cycloalkoxy, R_3 is hydrocarbyl as such or substituted with halogen, cyanide or alkoxy, alkoxy or cycloalkoxy, and R_4 is divalent hydrocarbyl as such or substituted with halogen, cyanide or alkoxy, or hydrocarbyloxy, the carbon content of each of the groups R_1 to R_4 being from 1 to 10, at a temperature from 0° to 120° C., the concentrations of acrylonitrile and said organic phosphorus (III) compound being in the ranges 5 to 75% and 0.01% to 5% by volume, respectively, and the acrylonitrile and solvent being essentially dry and free of phenolic acrylonitrile stabilisers, the product thus obtained containing at least 58% 1,4-dicyanobutenes.

4,126,633
FLUORINATED ALIPHATIC SULFIDES

Sameeh S. Toukan, Phoenixville, and Murray Hauptschein, Glenside, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 396,648, Sep. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 171,325, Aug. 21, 1971, abandoned. This application Sep. 8, 1976, Ser. No. 721,242
Int. Cl.[2] C07C *149/16*
U.S. Cl. 260—501.12 6 Claims

1. A fluorinated alkyl sulfide of the structure

$R_f(CH_2)_nS(CH_2)_mQ$ where R_f is selected from the class consisting of perfluoroalkyl, perfluoroisoalkoxyalkyl, and perfluoromonochloroalkyl radicals having from 5 to 13 carbon atoms, Q is $[-N(R)_2$ or$]-N^+(R)_2CH_2COOHX^-$, n is 2 or 3, m is an integer from 2 to 4, R is an alkyl group of 1 to 4 carbon atoms, and X is Cl or Br.

4,126,634
AMINOSULFONYLCARBOXYLIC ACIDS AND THEIR SALTS

Lucien Thil; Martin Fischer, both of Ludwigshafen, and Wolfgang Kindscher, Fussgoenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland, Pfalz, Fed. Rep. of Germany

Filed Aug. 1, 1977, Ser. No. 820,722

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1976, 2638860

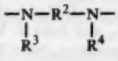
Int. Cl.[2] C07C *55/02*; C23F *11/10*

U.S. Cl. 562—507 **6 Claims**

1. A compound of the formula I

$$A-(SO_2-R^1-COO^{\ominus}X^{\oplus})_2 \qquad \text{I}$$

where R^1 is alkylene of 1 to 5 carbon atoms, A is the radical of a diamine of the formula II



II

R^2 is alkylene of 2 to 18 carbon atoms, alkylene of 2 to 18 carbon atoms interrupted by oxygen or nitrogen, arylene, arylene substituted by alkyl of 1 to 4 carbon atoms, methoxy, ethoxy or halogen, or arylene-alkylene of 6 to 18 carbon atoms, R^3 and R^4 are identical or different radicals chosen from hydrogen, linear and branched saturated, olefinically unsaturated or acetylenically unsaturated alkyl of 1 to 8 carbon atoms, if saturated, or of 2 to 18 carbon atoms, if unsaturated, alkyl of the above type substituted by methoxy or ethoxy, cycloalkyl of 5 to 12 members, phenyl, phenyl substituted by alkyl of 1 to 3 carbon atoms, methoxy, ethoxy, chlorine or bromine, or phenylalkyl, where alkyl is of 1 to 6 carbon atoms and $X^{\oplus}$ is a proton, an alkali metal cation or alkaline earth metal cation or an ammonium cation.

4,126,635
2-AMINO-3-(5- AND 6-)BENZOYLPHENYLACETIC ACIDS, ESTERS AND METAL SALTS THEREOF

William J. Welstead, Jr., and Henry W. Moran, both of Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Continuation-in-part of Ser. No. 604,371, Aug. 13, 1975, Pat. No. 4,045,576, which is a continuation-in-part of Ser. No. 487,499, Jul. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 354,625, Apr. 25, 1973, abandoned, which is a continuation-in-part of Ser. No. 254,285, May 17, 1972, abandoned. This application Apr. 15, 1977, Ser. No. 788,058

Int. Cl.[2] C07C *65/20*

U.S. Cl. 562—441 **1 Claim**

1. Sodium 2-amino-3-benzoylphenylacetate Hydrate.

4,126,636
PROCESS OF PRODUCING THE MAGNESIUM SALT OF p-CHLOROPHENOXYISOBUTYRIC ACID

Franz Stückler, Wolfsberg, Austria, assignor to Paul Hauser-Chepharin, chemisch-pharmazeutische Industriegesellschaft in Klagenfurt, Kärnten, Austria

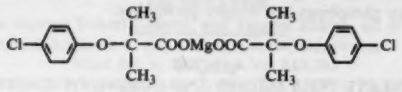
Filed Oct. 13, 1977, Ser. No. 841,835

Claims priority, application Austria, Oct. 18, 1976, 157751/76

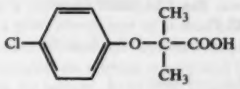
Int. Cl.[2] C07C *65/08*

U.S. Cl. 562—472 **4 Claims**

1. A process of producing the magnesium salt of p-chlorophenoxyisobutyric acid having the formula



which comprises dissolving p-chlorophenoxyiscbutyric acid having the formula



in an aqueous solution of a surplus of ammonia and reacting the resulting solution with an aqueous solution of a magnesium salt, which latter solution contains a surplus of ammonium ions and gaseous ammonia.

4,126,637
PROCESS FOR THE PRODUCTION OF 2,2-DIMETHYL-5-(2,5-XYLYLOXY)VALERIC ACID

Om P. Goel, Canton, and William M. Pearlman, Ann Arbor, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 17, 1977, Ser. No. 807,468

Int. Cl.[2] C07C *65/02*

U.S. Cl. 562—421 **10 Claims**

1. Process for the production of 2,2-dimethyl-5-(2,5-xylyloxy)valeric acid which comprises subjecting 2,2-dimethyl-5-(2,5-xylyloxy)valeraldehyde to oxidation with elemental oxygen at pressures from about 10–50 pounds per square inch in a three-phase reaction mixture comprising a water immiscible organic solvent for said valeraldehyde, an aqueous alkaline solution, and at least a catalytic amount of at least one noble metal catalyst selected from the group consisting of gold, platinum and palladium.

4,126,638
PROCESS FOR PURIFYING BENZENE DICARBOXYLIC ACIDS

Jacques Alagy, Lyons; Christian Busson, Rueil Malmaison, and Maurice Cessou, Communay, all of France, assignors to Institut Francais du Petrole, France

Filed Apr. 14, 1976, Ser. No. 676,714

Claims priority, application France, Apr. 14, 1975, 75 11750

Int. Cl.[2] C07C *51/42*

U.S. Cl. 562—487 **14 Claims**

1. In a process for purifying terephthalic acid containing 4-carboxybenzaldehyde as an impurity, wherein said acid is dissolved in a solvent and treated at a temperature of from 110° to 350° C., at a pressure sufficient to maintain a liquid phase, in the presence of a hydrogenation catalyst and in the absence of molecular hydrogen, the improvement wherein the solvent is a mixture of water with a secondary or tertiary hydrocarbyl alcohol of 3 to 8 atoms, the mixture containing 0.5 to 7% by weight of said alcohol dissolved therein.

4,126,639
PROCESS FOR 11A-DEHALOGENATION OF 11A-HALOTETRACYCLINES

Hermann Faubl, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 372,308, Jun. 21, 1973, abandoned. This application Nov. 19, 1976, Ser. No. 743,395
Int. Cl.[2] C07C *103/22*
U.S. Cl. 260—559 AT 13 Claims

4. A process which comprises contacting an 11a-halo-6-methylenetetracycline compound in a reaction-inert solvent with at least an equimolar amount of a phosphorous compound selected from the group consisting of secondary phosphines, tertiary phosphines and tertiary phosphites.

4,126,640
N-ALKYL POLYAMINES AND CURING OF EPOXY RESINS THEREWITH

Don E. Floyd, Minneapolis, Minn., assignor to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Aug. 1, 1977, Ser. No. 821,014
Int. Cl.[2] C07C *83/00*
U.S. Cl. 260—583 P 4 Claims

1. An N-alkyl polyamine of the formula

$$R—[NH(CH_2)_x]_y—NHR'$$

where R is an aliphatic hydrocarbon radical selected from the group consisting of 4-methylhexyl-2, 4-methylpentyl-2 and hexyl-2, x is an integer of 2 or 3, y is an integer of 2–4 and R′ is H, R or R″ where R″ is an aliphatic hydrocarbon substituent having 2–14 carbon atoms with the proviso that R″ may

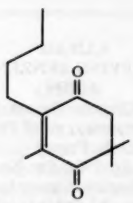
(a) contain an oxygen atom in the chain
(b) contain a hydroxyl substituent
(c) contain a phenyl substituent, or
(d) contain any combination of (a), (b) and (c).

4,126,641
PROCESS FOR PREPARING 2-BUTYL-3,5,5-TRIMETHYL-2-CYCLOHEXEN-1,4-DIONE

Kenneth K. Light, Long Branch; Bette M. Spencer, Ocean Grove; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, and Edward J. Shuster, both of Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 3, 1977, Ser. No. 774,057
Int. Cl.[2] C07C *45/00*
U.S. Cl. 260—586 C 2 Claims

1. The process for preparing 2-butyl-3,5,5-trimethyl-2-cyclohexen-1,4-dione having the structure:



comprising the steps of:

(I) Forming a mono-ketal of 3,5,5-trimethyl-2-cyclohexen-1,4-dione, whereby the ketal moiety is at the "1" position;
(II) Mixing said ketal with n-butyltriphenylphosphorane thereby forming a ketal of 2-butyl-3,5,5-trimethyl-2-cyclohexen-1,4-dione, the ketal moiety being at the "1" position;
(III) Hydrolyzing said ketal of 2-butyl-3,5,5-trimethyl-2-cyclohexen-1,4-dione to said dione, the hydrolysis taking place in acid media.

4,126,642
CONVERSION OF BUTADIENE (1,3) AND METHANOL

Leo Kim, and Milton M. Wald, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 14, 1977, Ser. No. 850,874
Int. Cl.[2] C07C *15/02;* C10G *9/04*
U.S. Cl. 260—673 15 Claims

1. A method comprising contacting butadiene (1,3) with a material selected from the group consisting of methanol; dimethyl ether; other materials which react to provide methanol in situ, other reaction products, if any, being non-interfering; and mixtures thereof, and with an effective amount of a metal halide selected from ZnI_2, $ZnBr_2$, and mixtures thereof at a temperature of from 180° C. to about 450° C.

4,126,643
BUTADIENE (1,3) CONVERSION

Timm E. Paxson, and Milton M. Wald, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

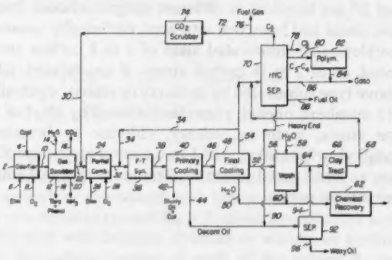
Filed Nov. 14, 1977, Ser. No. 850,875
Int. Cl.[2] C07C *15/02;* C10G *9/04*
U.S. Cl. 260—673 10 Claims

1. Process for the conversion of butadiene (1,3) comprising, contacting butadiene (1,3) and a material selected from zinc iodide, zinc bromide, and mixtures thereof at a temperature of from about 150° C. to about 550° C.

4,126,644
METHOD OF UPGRADING A FISCHER-TROPSCH LIGHT OIL

Philip D. Caesar, Princeton; William E. Garwood, Haddonfield; Alan W. Peters, Morrestown, all of N.J., and John J. Wise, Media, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 14, 1976, Ser. No. 732,235
Int. Cl.[2] C07C *3/62, 1/02*
U.S. Cl. 260—676 R 6 Claims



1. In a method for upgrading a product of Fischer-Torpsch synthesis boiling within the range of C_5 to 400° F. to gasoline and fuel oil product by contacting a crystalline aluminosilicate catalyst characterized by a pore dimension greater than 5 Angstroms, a silica to alumina ratio of at least 12 and a constraint index within the range of 1 to 12, the improvement which comprises,

(a) effecting contact of said Fischer-Tropsch synthesis product boiling within the range of C_5 to 400° F. maintained at least 90 percent in liquid phase with said crystalline aluminosilicate catalyst in the absence of hydrogen at a pressure within the range of 200 to 1000 psig, maintaining the temperature during said contact within the range of 400° to 560° F. and a liquid hourly space velocity within the range of 0.1 to 2, and
(b) recovering a C_5 plus gasoline product of improved octane and a fuel oil product from said liquid phase upgrading operation.

4,126,645

SELECTIVE HYDROGENATION OF HIGHLY UNSATURATED HYDROCARBONS IN THE PRESENCE OF LESS UNSATURATED HYDROCARBONS

Bruce M. Collins, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 25, 1977, Ser. No. 781,415

Claims priority, application United Kingdom, Apr. 6, 1976, 13965/76

Int. Cl.² C07C *5/06*

U.S. Cl. 260—677 A **8 Claims**

1. A process of selective hydrogenation of highly unsaturated hydrocarbons in the presence of less unsaturated hydrocarbons characterised by the use of a catalyst which comprises palladium supported on particulate alumina having a surface area in the range 5 to 50 $m^2 g^{-1}$, a helium density of under 5 g cm^{-3}, a mercury density of under 1.4 g cm^{-3} and a pore volume of at least 0.4 $cm^3 g^{-1}$, at least 0.1 $cm^3 g^{-1}$ of which is in pores of radius over 300 Angstrom units, the palladium being present mainly in the region of the catalyst particles not more than 150 microns beneath their geometric surface.

4,126,646

THERMOSTABLE FLAMEPROOFING AGENT FOR COPOLYESTERS, PROCESS FOR MAKING IT, COPOLYESTER COMPOSITIONS PREPARED BY USING IT, PROCESS FOR SAID COMPOSITIONS, AND FORMED BODIES MADE FROM SAID COMPOSITIONS

Aldemaro Ciaperoni, Bollate; Giuseppe Quaglia, S. Giorgio su Legnano, and Gino Dall'Asta, Milan, all of Italy, assignors to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A., Italy

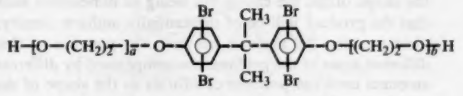
Filed Oct. 15, 1976, Ser. No. 732,957

Claims priority, application Italy, Oct. 20, 1975, 28435 A/75

Int. Cl.² C08G *63/66, 63/68*

U.S. Cl. 260—860 **18 Claims**

1. Thermostable flame-proofing agent for copolyester compositions, adapted to the production of fibers, which comprises a product (α) of the reaction of 1 mole of (1) a dialkyl diester of an alkali dicarboxyaryl-sulphonate, said dialkyl having not more than three carbon atoms in each alkyl group, with (2) from 1 to 2 moles of at least a tetrabrominated diol having the general formula



wherein *a* and *b* represent, independently, one of the other, a whole number from 1 to 3 inclusive, said reaction being effected in the presence of a transesterification catalyst selected from the group consisting of compounds of Zn, Co, Ca, Sn, Ti and Mn.

4,126,647

ETHYLENE POLYMER/ACRYLONITRILE POLYMER COMPOSITES

Edward G. Howard, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 20, 1977, Ser. No. 808,394

Int. Cl.² C08L *23/08*

U.S. Cl. 260—878 R **22 Claims**

1. A solid, homogeneous, ethylene polymer/acrylonitrile polymer composite which comprises

(a) 5 to 65% by weight of ethylene polymer having an inherent viscosity of at least 8 selected from the group consisting of polyethylene and ethylene copolymers containing up to 15% by weight of units derived from one or more 1-alkenes of 3 to 10 carbons, and

(b) 35 to 95% by weight of solid filler composed of acrylonitrile polymer selected from the group consisting of polyacrylonitrile and copolymers of acrylonitrile containing not more than 15% by weight of units derived from ethylenically unsaturated comonomers, said composite being prepared by polymerizing ethylene onto the surface of the acrylonitrile polymer in the presence of an organo-transition metal compound, so that essentially all of the ethylene polymer is polymerized onto the surface of acrylonitrile polymer and essentially all of the acrylonitrile polymer has ethylene polymer polymerized onto its surface.

4,126,648

LOW-DENSITY POLYETHYLENE-BASED POLYMER COMPOSITION FOR MANUFACTURING THIN FILMS OR SHEATHS

Elias Agouri; Robert Laputte, and Jacques Rideau, all of Pau, France, assignors to Ato Chimie, Courbevoie, France

Filed Jul. 6, 1977, Ser. No. 813,293

Claims priority, application France, Jul. 8, 1976, 76 20918

Int. Cl.² C08F *255/02, 291/00*

U.S. Cl. 260—878 R **12 Claims**

1. A low-density polyethylene-based polymer composition for producing films or sheaths, and more particularly films or sheaths having a reduced thickness, said composition being constituted by a graft copolymer of at least one styrene monomer or a mixture of at least one styrene monomer and at least one acrylic monomer, on a trunk constituted by a pre-formed alloy containing, by weight, 50 to 95% low-density polyethylene and 50 to 5% high-density polyethylene and/or polypropylene, the proportion of the styrene monomer or monomers or of the styrene monomer and acrylic monomer mixture in said graft copolymer being comprised between 5 and 50% by weight of said graft copolymer.

4,126,649

POLYOLEFINIC COMPOSITIONS CONTAINING E/VA COPOLYMER

Jean-Claude Decroix, Arras, France, assignor to Societe Chimique des Charbonnages - CdF Chimie, Paris, France

Filed Jun. 16, 1977, Ser. No. 807,133

Claims priority, application France, Jun. 21, 1976, 76 18825

Int. Cl.² C08L *23/08*

U.S. Cl. 260—897 B **4 Claims**

1. Polyolefin compositions comprising:

(a) from 92 to 99% by weight of isotactic poly-1-butene having a melt index of from 0.5 to 5, and

(b) from 1 to 8% by weight of an ethylene-vinyl acetate copolymer having a melt index of from 0.5 to 5 and a vinyl acetate content of from 9 to 35% by weight.

4,126,650

SYNTHESIS OF MONO-ALKYL ACID PHOSPHATES WITH HIGH MONO-CONTENT

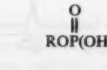
Francis A. Via, Yorktown Heights, N.Y., and Sophia Y. Liu, Fremont, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 27, 1977, Ser. No. 791,625

Int. Cl.² C07F *9/09*

U.S. Cl. 260—980 **5 Claims**

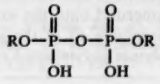
1. A method of preparing mono-alkyl acid phosphates having the formula:



wherein R is straight or branched alkyl having from 1 to about 25 carbon atoms, comprising the steps of (1) contacting P_2O_5 with a heel, wherein said heel is comprised of monoalkyl acid phosphate, di-alkyl acid phosphate and H_3PO_4; (2) contacting an alcohol having the formula:

ROH

wherein R is as defined above, with the P_2O_5 and heel mixture; followed by mixing until an intermediate is formed having the formula:



wherein R is as defined above, and then (3) addition of water, followed by mixing until the reaction is complete.

4,126,651

PRODUCTION OF PLASTER MOLDS BY MICROWAVE TREATMENT

James M. Valentine, Vandalia, Ohio, assignor to Valentine Match Plate Company, Dayton, Ohio

Continuation-in-part of Ser. No. 609,305, Sep. 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 419,580, Nov. 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 253,204, May 15, 1972, abandoned. This application Mar. 22, 1977, Ser. No. 780,024

Int. Cl.[2] H05B *9/00*

U.S. Cl. 264—25 **8 Claims**

1. The method of fabricating from gypsum-containing plaster, a foundry casting component which is to be used in casting a metal part from molten casting metal at a temperature above the boiling point of water, and from which the water must be substantially completely eliminated to prevent its turning to steam upon contact with the molten metal, which method comprises the steps of,

(a) forming a moldable suspension of the plaster and water,

(b) molding a mass of said suspension into a predetermined configuration,

(c) shielding said molded mass against radiation of heat therefrom by heat insulating means pervious to microwave radiation and to water vapor and steam; and

(d) subjecting said insulated mass to electromagnetic wave energy at microwave frequency until the internal temperature of said mass exceeds the calcining temperature of gypsum but does not reach 600° F.

4,126,652

PROCESS FOR PREPARATION OF A METAL CARBIDE-CONTAINING MOLDED PRODUCT

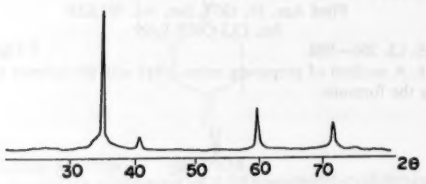
Kunio Oohara; Tatsuhiko Shizuki; Hideyuki Mitamura, and Masahiro Sugino, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1977, Ser. No. 771,985

Claims priority, application Japan, Feb. 26, 1976, 51-20922; Jun. 6, 1976, 51-80634

Int. Cl.[2] C04B *35/56*

U.S. Cl. 264—29.6 **13 Claims**



1. A process for the preparation of a metal carbide-containing molded product which comprises heating a molded composition comprising at least one powdery metal selected from the group consisting of B, Ti, Si, Zr, Hf, V, Nb, Ta, Mo, W, Cr, Fe and U and having an average particle size of not more than about 50μ and an acrylonitrile polymer at a temperture of about 200° to 400° C. and then calcining the resulting product at a temperature of about 900° to 2500° C. in an inert atmosphere, said powdery metal being present in an amount of from about 5 to 90% by weight based on the total weight of the acrylonitrile polymer and the powdery metal.

4,126,653

METHOD OF MANUFACTURING SILICON NITRIDE PRODUCTS

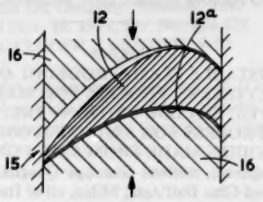
Dexter W. Smith, 284, Robin Hood La., Birmingham; William J. Arrol, 240, Station Rd., Solihull, and Adrian C. Brennan, 11 Sumner Close, Hampton Magna, all of England

Continuation of Ser. No. 197,833, Nov. 11, 1971, abandoned. This application Mar. 17, 1976, Ser. No. 667,582

Claims priority, application United Kingdom, Nov. 17, 1970, 54569/70; Dec. 30, 1970, 61747/70; Dec. 30, 1970, 61748/70

Int. Cl.[2] C04B *35/58*

U.S. Cl. 264—63 **7 Claims**



1. A method of manufacturing a silicon nitride product of complex shape and substantially uniform density including the steps of:

(a) forming a mixture of silicon nitride in powder form with a fluxing agent and a temporary binder;

(b) forming from said mixture a preform of substantially uniform density less than the final density of the product;

(c) heating the preform to remove the temporary binder;

(d) positioning the preform in a die cavity defined between punches which together define the shape of the product, the shape of the preform being non-commensurate with the shape of the die cavity but being of dimensions such that the product will be of substantially uniform density;

(e) hot pressing the preform between the punches so that different areas of the preform are compressed by different amounts until the preform comforms to the shape of the punches; and

(f) continuing said hot pressing of the preform between said punches until a substantially uniform density product is obtained.

4,126,654

ALUMINA OR ALUMINA-CHROMIA REFRACTORIES

Lionel C. Montgomery, Bay Village; Robert G. Fenish, Parma, and Victor Mandorf, Jr., Olmsted Falls, all of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 18, 1977, Ser. No. 760,458

Int. Cl.[2] C04B *35/64*

U.S. Cl. 264—63 **36 Claims**

1. Method of producing a shaped article of improved refractory material having high flexural strength and high resistence to physical erosion by and chemical attack by molten metals, which method comprises the steps of:

(a) heating to fusion Al_2O_3 powder to form a fused grain material,

(b) crushing said fused grain material to a fused grain powder,

(c) adding to said fused grain powder a binder comprising unfused Al_2O_3 powder and chromium metal powder to form a refractory powder mixture,

(d) adding water to said refractory powder mixture to make a slurry,
(e) forming said slurry in a desired shape,
(f) heating said formed slurry only in an oxidizing atmosphere at a sufficiently elevated temperature and for a sufficient time to complete the conversion of the chromium metal to chromium oxide and form a reaction sintered bond, and
(g) cooling the thus formed shaped article to ambient temperature.

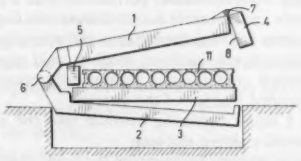
18. Method of producing a shaped article of improved refractory material having high flexural strength and high resistance to physical erosion by and chemical attack by molten metals, which method comprises the steps of:
(a) heating to fusion powders of Al_2O_3 and Cr_2O_3 to form a fused grain material,
(b) crushing said fused grain material to a fused grain powder,
(c) adding to said fused grain powder a binder comprising unfused Al_2O_3 powder and chromium metal powder to form a refractory powder mixture,
(d) adding water to said refractory powder mixture to make a slurry,
(e) forming said slurry in a desired shape,
(f) heating said formed slurry only in an oxidizing atmosphere at a sufficiently elevated temperature and for a sufficient time to complete the conversion of the chromium metal to chromium oxide and form a reaction sintered bond, and
(g) cooling the thus formed shaped article to ambient temperature.

4,126,655

METHOD AND APPARATUS FOR MANUFACTURING CONCRETE ELEMENTS

Pentti E. E. Virtanen, Ilvestie 6, 37800 Toijala, Finland

Filed May 24, 1976, Ser. No. 689,365
Claims priority, application Finland, Jun. 10, 1975, 751732
Int. Cl.[2] B28B *1/08*
U.S. Cl. 264—71 **3 Claims**



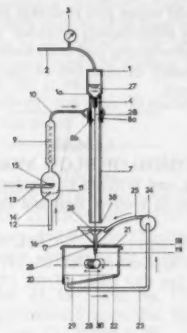
1. A method for manufacturing concrete elements by means of such a turnable mould of a closed construction, said mould comprising:
a first mould half;
a second mould half which is hinged to the first mould half;
an auxiliary mould to be detachably arranged between the first and the second mould half; and
vibration devices,
the method comprising the following steps:
the casting is performed while the turnable mould is in an at least approximately horizontal casting position so that the mix to be cast is compressed in the space between the first mould half and the auxiliary mould, such that the first mould half functions as the casting base proper, the auxiliary mould being fastened to the inner surface of the second mould half, which is at least partly opened.
the concrete in the mould being subjectd simultaneously to vibration and compression,
the turnable mould is turned into an at least approxmately vertical vibrating position, whereupon
the turnable mould is turned into an at least approxmately horizontal disassembly position, in which it is opened, using the auxiliary mold as a transport means for removing the cast element from the mould
the turning of the turnable mould from the vertical position to the disassembly position being performed in the same direction as the turning from the casting position to the vertical position, such that, the turnable mould performs a turning of at least approximately 180° when moving from the casting position to the disassembly position.

4,126,656

METHOD OF FOR MANUFACTURING FILAMENTS OF VISCOSE

Pierre Monzie, Grenoble; Serge Chaunis, Saint-Ismier; Pierre Goullioud, Ecully, and Patrick Laine, Collonges-au-Mont-D'Or, all of France, assignors to Centre Technique de L'Industrie des Papiers, Cartons et Celluloses et Technique Papetiere Avancee, Grenoble, France

Filed May 6, 1977, Ser. No. 794,584
Claims priority, application France, May 7, 1976, 76 14350; Jan. 13, 1977, 77 01632
Int. Cl.[2] C04B *15/14;* D01F *2/06*
U.S. Cl. 264—83 **8 Claims**



1. A method of manufacturing viscose cellulose regenerated filaments from a cellulosic starting material wherein a viscose is prepared from said starting material until a state of ripening close to its gelling point, the viscose in such a state is extruded by passing it through a spinneret to form continuous thin strands, the extruded thin strands are passed in a continuous way at first through an inert gaseous medium, but through a coagulating gaseous medium, then again the strands having thus been coagulated are brought into contact with an acid medium which causes a preregeneration of the initial cellulose converting the strands into continuous filaments, and said filaments are passed through at least one acid liquid medium which causes ultimate regeneration of the initial cellulose.

4,126,657

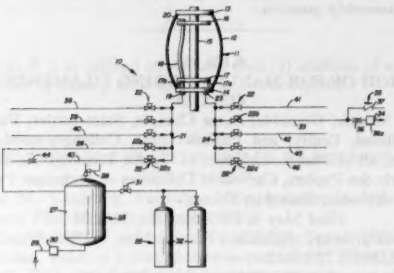
METHOD FOR CURING TIRES AND THE LIKE

Victor C. Gado, Akron, Ohio, assignor to William R. Holland, Akron, Ohio, a part interest

Filed Jan. 26, 1976, Ser. No. 652,199
Int. Cl.[2] B29H *5/02*
U.S. Cl. 264—85 **5 Claims**

1. A method for curing tires and the like on a center mechanism adapted for positioned within separable molds comprising the steps of positioning said tire or the like and said center mechanism within said molds, introducing an initial shaping fluid into said mechanism, purging said fluid, introducing into said mechanism high temperature hot water of a temperature in the range of 325° to 375° F. and of a pressure in the range of 225 to 600 p.s.i. and maintaining said hot water in said mechanism for a predetermined time sufficient to achieve the desired curing of the tire or the like, according to the tire or the like

being cured, purging said hot water with inert gas, and then introducing cold water into said mechanism to cool said tire or the like preparatory to the removal thereof from said molds, the application of pressure of said initial shaping fluid, hot water, inert gas and cold water pressure mediums being maintained during each of said steps resulting in conformance of



said tire or the like to said molds, whereby mixing of said hot water and said cold water and resultant loss of temperature in said hot water is substantially avoided without omitting or significantly foreshortening said cold water cooling step necessary to insure quality of said tire or the like and to prevent deformation thereof.

4,126,658

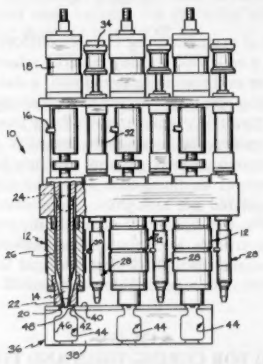
METHOD OF BLOW MOLDING

Samuel J. Rupert, and William E. Ziegler, both of Ann Arbor, Mich., assignors to Hoover Ball and Bearing Company, Saline, Mich.

Continuation-in-part of Ser. No. 681,708, Apr. 29, 1976, abandoned. This application Oct. 28, 1977, Ser. No. 846,431

Int. Cl.[2] B29C *17/07, 17/10*

U.S. Cl. 264—89 **10 Claims**



1. In a method of making a container of blow moldable thermoplastic material, the steps of extruding a tubular parison of a predetermined diameter from an annular orifice located essentially in a horizontal plane representing the bottom surface of an extrusion head, enclosing the tubular parison in a mold that has an upper end movable in said horizontal plane in slidable engagement with said extrusion head, said mold being positioned at said orifice and having an interior cavity defining said container with a neck at its upper end larger in diameter than said predetermined diameter, said cavity also defining a dome radiating outward from the upper end of the neck so as to provide a top opening greater in diameter than the outer diameter of said annular orifice, immediately upon closing the mold closing said orifice and blowing the tubular parison at said orifice essentially to the shape of the mold cavity so that the parison at the neck of the mold cavity will be enlarged to conform to the shape of said neck and so that as an incident to said blowing and said closing of the orifice severing of the parison from the thermoplastic material at said annular orifice occurs and the upper end of the parison is flared outwardly to the outwardly radiating portion of said dome, immediately thereafter shifting horizontally the mold that contains the enclosed article so that said upper end of the mold remains exclusively in said horizontal plane to a second shaping station while the article is still at a temperature sufficient for subsequent shaping stations, inserting a finish blow pin into said mold and the neck of the article and as an incident thereto calibrating the neck of the article and severing from the article the neck flash that was expanded into the dome, introducing air at a pressure into said article for a time sufficient to allow the article to set, opening the mold and discharging the article therefrom, opening said extrusion orifice and extruding a succeeding parison, and returning the mold to the extrusion station and repeating the cycle with respect to the succeeding parison.

4,126,659

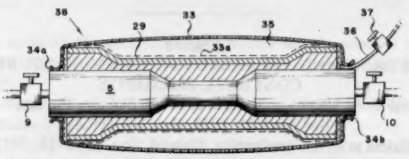
METHOD OF MAKING A HOLLOW ARTICLE

Leiv H. Blad, Van Nuys, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Jul. 9, 1976, Ser. No. 703,856

Int. Cl.[2] B29C *17/06*

U.S. Cl. 264—90 **22 Claims**



1. A method for making a hollow, resin-impregnated fibrous article comprising the steps of:

fabricating from a flexible, porous material a pressurizable inflatable and re-usable mandrel incorporating pressurization means for introducing into and extracting from said mandrel a liquid rigidizing medium, said mandrel having an external configuration substantially corresponding to the intended interior of the article;

flowing a liquid rigidizing medium into the mandrel at a temperature above ambient;

reducing to ambient temperature the liquid medium, thereby causing the medium to solidify and the mandrel to rigidize;

assembling at least one layer of resin-impregnated fibrous material upon the rigidized mandrel;

covering the assembled fibrous material and rigidized mandrel with an envelope having an internal configuration corresponding to the desired external configuration of the article;

derigidizing the mandrel;

pressurizing the interior of the mandrel to a pressure above ambient;

heating the assembly within the envelope to a temperature above ambient for a time sufficient to cure the resin;

reducing the temperature of the cured article to ambient temperature;

reducing the pressure within the mandrel to ambient pressure;

removing the envelope from the exterior of the cured article; and

removing the mandrel from within the cured article.

20. A method for making a hollow, resin-impregnated fibrous article comprising the steps of:

fabricating a flexible hollow sleeve having an external con-

figuration substantially corresponding to the intended interior configuration of the article;

fabricating an uncollapsed, non-inflated mandrel incorporating pressurization means for introducing and extracting a liquid rigidizing medium, the mandrel having an external configurating substantially corresponding to the sleeve interior;

placing the sleeve on the mandrel;

installing the mandrel in a mold having substantially the intended internal configuration of the article;

heating to a liquid state a rigidizing medium;

filling the mandrel with the liquid medium;

sealing off the filled mandrel;

cooling and solidifying the liquid medium and the mandrel;

removing the mold from around the rigidized mandrel, so as to support and rigidize the sleeve;

assembling at least one ply of resin-impregnated fibrous material upon the rigidized sleeve;

locating the assembled material and rigidized sleeve within an envelope having an internal configuration substantially corresponding to the intended exterior of the article in a mating relationship;

derigidizing the mandrel;

increasing to above ambient the pressure interiorly of the mandrel;

heating the assembled material, sleeve and envelope above ambient temperature for a time sufficient to cure the article;

returning the cured article to ambient temperature;

returning the pressure within the interior of the mandrel to ambient;

removing the mandrel from within the sleeve; and

removing the sleeve from within the cured article.

22. A process for making a hollow, resin-impregnated fibrous article comprising the steps of:

fabricating a flexible, hollow sleeve having an external configuration substantially corresponding to the intended interior of the article;

fabricating a collapsible, inflatable mandrel with pressurization means therein for introducing and extracting a liquid rigidizing medium, the mandrel normally having an external configuration substantially corresponding to the interior of the sleeve;

placing the sleeve around the mandrel;

flowing a liquid rigidizing medium into the mandrel;

solidifying the medium causing the mandrel to rigidize, so as to support and rigidize the sleeve;

assembling at least one ply of resin-impregnated fibrous material upon the rigidized sleeve;

assembling the material and rigidized mandrel and sleeve into an envelope having an internal configuration substantially corresponding to the intended exterior of the article;

placing an impervious flexible cover over the envelope and sealing it to the sleeve, thereby defining a container around the envelope and assembled material;

evacuating the container;

derigidizing the mandrel;

heating the assembled material above ambient temperature for a time sufficient to cure the resin-impregnated material and define the article;

returning the cured article to ambient temperature;

removing the flexible cover and envelope from around the cured article;

removing the mandrel from within the sleeve; and

removing the sleeve from within the cured article.

4,126,660

PROCESS FOR THE MANUFACTURE OF ORIENTED SHEETS OF THERMOPLASTIC RESIN WHICH ARE PROTECTED AGAINST THE ACTION OF ULTRAVIOLET RAYS

Axel Lempkowicz, Brussels, Belgium; Jean Nanoux, Abbeville, France, and Jean-Francois Bequet, Rhode Saint-Genese, Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Jul. 8, 1977, Ser. No. 814,101

Claims priority, application France, Aug. 4, 1976, 76 24020

Int. Cl.[2] B29D *7/20*

U.S. Cl. 264—101 **8 Claims**

1. Process for the manufacture of an oriented sheet of thermoplastic resin which is protected against the action of ultraviolet rays, which comprises extruding a sheet from the resin, conditioning this sheet to a temperature favoring orientation by stretching, stretching the conditioned sheet in at least one direction so as to induce molecular orientation tensions in the sheet, and cooling the stretched sheet under tension to a temperature below the second order transition temperature of the resin, comprising:

before stretching the conditioned sheet, applying to at least one of the faces of the sheet a solution comprising at least one solvent exerting a swelling action on the resin and between 5 and 40% weight of at least one anti-UV agent which is soluble in the solvent, the amount of solution deposited per square metre of surface of the sheet being between 20 and 200 g, and

evaporating the solvent less than 60 seconds after applying the solution to the sheet.

4,126,661

PROCESS FOR PRODUCING PRODUCTS OF CROSS-LINKED THERMOPLASTIC MATERIAL

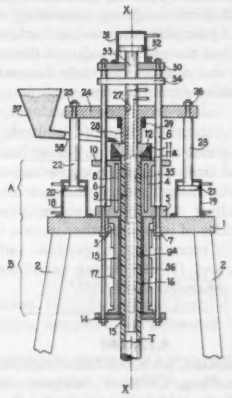
Thierry Fulconis, Nancy, and Bernard Ginglinger, Pont-a-Mousson, both of France, assignors to Pont-a-Mousson S.A., Nancy, France

Filed Mar. 21, 1977, Ser. No. 779,879

Claims priority, application France, Jul. 19, 1976, 76 21933

Int. Cl.[2] B28B *3/20*

U.S. Cl. 264—209 **8 Claims**



1. A process for producing a hollow tubular product of cross-linked high-density polyethylene from an essentially powdered cross-linkable mixture comprising said high-density polyethylene and a cross-linking agent, comprising forcing said mixture into and through an elongate passageway which extends longitudinally along an axis and has an annular cross-sectional shape, by exerting a pressure on said mixture in a direction parallel to said axis while maintaining the cross-sectional shape and size of the whole of said mixture in said passageway constant and while maintaining an upstream part of said pas-

sageway relative to the direction of travel of said mixture at a first temperature sufficient to sinter said mixture but insufficient to cross-link said high-density polyethylene and maintaining a downstream part of said passageway adjacent to said upstream part relative to the travel of said mixture at a second temperature distinctly higher than said first temperature and sufficient to cross-link said high-density polyethylene.

4,126,662

METHOD FOR LIMITING GLOSS OF INJECTION MOLDABLE POLYMERS

Terence C. Middlebrook, Bartlesville, Okla., assignor to Phillips Petroleum Co., Inc., Bartlesville, Okla.

Filed Oct. 9, 1975, Ser. No. 621,100

Int. Cl.[2] B29D *1/00*; C08L *53/02*

U.S. Cl. 264—328 **9 Claims**

1. A method for limiting gloss of an injection molded elastomeric polymer said polymer being chosen from either linear or radial block copolymers which have thermoplastic blocks and elastomeric blocks with terminal blocks of thermoplastic said method comprising:

(a) preparing an admixture of said injection moldable elastomeric polymer and an additive of finely divided textile fibers ranging in size up to about 3 millimeters in length, said additive being in an amount of about 2 to about 30 parts by weight per 100 parts of block copolymer effective to limit gloss of the molded polymer; and

(b) injection molding an article from said admixture.

4,126,663

PROCESS FOR RECOVERING VANADIUM VALUES FROM ACIDIC SULFATE SOLUTION

Frank Pitts, Magalas, France, assignor to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Oct. 17, 1977, Ser. No. 842,734

Int. Cl.[2] C01G *31/00*

U.S. Cl. 423—63 **2 Claims**

1. A process for recovering vanadium values from an acidic sulfate solution containing vanadium in the pentavalent state, iron and other metal values comprising the steps of (1) partially neutralizing said solution by adding sufficient basic magnesium compound selected from the group consisting of magnesium oxide, magnesium hydroxide, magnesium carbonate and mixtures thereof to adjust the pH to a value in the range of 1.2 to 3.2; (2) contacting the resulting partially neutralized solution with an organic amine or quarternary ammonium compound to extract vanadium values from the aqueous to the organic phase; (3) separating the two phases; (4) neutralizing the vanadium free aqueous phase by adding sufficient basic magnesium compound selected from the group consisting of magnesium oxide, magnesium hydroxide, magnesium carbonate and mixtures thereof to adjust the pH to a value of at least 3.5 to precipitate hydroxides of iron and other metals; (5) separating said hydroxides; (6) recovering magnesium sulfate from the remaining solution and; (7) recovering vanadium values from the organic phase separated in step (3).

4,126,664

STABILIZED CYANAMIDE SOLUTIONS

Stefan Weiss, Trostberg, Germany, assignor to Süddeutsche Kalkstickstoff-Werke Aktiengesellschaft, Trostberg, Germany

Filed Sep. 1, 1977, Ser. No. 829,627

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1976, 2642023

Int. Cl.[2] C01C *3/16*

U.S. Cl. 423—265 **9 Claims**

1. An aqueous cyanamide solution of improved stability containing 20% to 80% cyanamide by weight, and at least one stabilizer, said one stabilizer being an alkyl ester of a carboxylic acid dissolved in said solution in an amount of 0.03 to 1.0 percent by weight and effective for enhancing the stability of said cyanamide in said solution during extended storage, said alkyl having up to 8 carbon atoms.

4,126,665

PREPARATION OF POLYMERIC ALKALINE EARTH METAPHOSPHATE GLASSES

Richard C. Ropp, Warren, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 10, 1976, Ser. No. 694,752

The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.

Int. Cl.[2] C01B *15/16, 25/26*; C03C *3/00, 5/00*

U.S. Cl. 423—314 **12 Claims**

1. A method of preparing a polymeric phosphate glass having the formula:

$$[M(PO_3)_b]_n$$

where M is a single metal ion, to the exclusion of other metal ions, selected from the group consisting of aluminum, zinc, cadmium and the alkaline earth metals, beryllium, magnesium, calcium, strontium and barium, where "*b*" is 3 for aluminum and 2 for the other metal ions, and "*n*" is a degree of polymerization of at least 4, which comprises forming a solution of said metal ion M and phosphoric acid by dissolving a compound supplying said metal ion M in a controlled excess of phosphoric acid to form a stoichiometrically proportioned solution, adding a precipitating agent effective to precipitate soluble transition metal impurities other than the selected metal ion, removing formed insolubles to produce an essentially pure solution, forming a crystal product from the resulting purified solution by evaporation, washing said crystal product substantially free of phosphoric acid to yield a stoichiometrically proportioned crystalline phosphate salt, heating said crystalline salt in a controlled heating cycle in the substantial absence of phosphoric acid or other phosphate or metal ion compounds until a polymerized melt stage is attained, and continuing the polymerization until polymerization is substantially complete and a homogeneous glass is formed.

4,126,666

PROCESS FOR PRODUCING HIGH PURITY LITHIUM SULFIDE

Susan R. Jacob, Royersford, and Patrick M. Brown, Exton, both of Pa., assignors to Foote Mineral Company, Exton, Pa.

Filed Jan. 25, 1978, Ser. No. 872,310

Int. Cl.[2] C01B *17/22*; C01D *15/00*

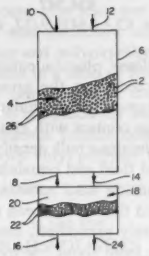
U.S. Cl. 423—561 A **3 Claims**

1. A process for producing lithium sulfide of at least about 98% purity which comprises initially contacting lithium carbonate powder composed of particles having a particle diameter in the range of about 1 to about 10 microns with hydrogen sulfide at a temperature in the range of about 150° to about 175° C., and then heating the lithium carbonate to a temperature in the range of about 500° to about 700° C. and while at said temperature contacting said lithium carbonate with hydrogen sulfide for a period of from about 1 to about 4 hours.

4,126,667
PROCESS FOR THE EXCHANGE OF HYDROGEN ISOTOPES USING A CATALYST PACKED BED ASSEMBLY

John P. Butler; James den Hartog, both of Deep River, and Fred W. R. Molson, Petawawa, all of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Oct. 18, 1976, Ser. No. 733,417
Claims priority, application Canada, Jun. 25, 1976, 255750
Int. Cl.[2] C01B *5/00*
U.S. Cl. 423—580 10 Claims



1. A process for the exchange of hydrogen isotopes using a catalyst bed assembly, comprising:

a. simultaneously contacting streams of liquid water and hydrogen with one another and a catalyst packed bed assembly in the path of the contacting streams, both of said streams being at a temperature in the range 273° to 573° K., with one of the streams containing a concentration of a hydrogen isotope in excess of that which it would contain when the liquid water-gaseous hydrogen streams are in isotopic equilibrium at the operating conditions of temperature and mass flow rates of the streams and the other stream being a deficient stream and containing a concentration of that hydrogen isotope which is less than that which it would contain when the liquid water gaseous hydrogen is in equilibrium at said operating conditions, so that the deficient stream is enriched by transfer of the hydrogen isotope in a two-step hydrogen isotope exchange process from the other stream with the following simultaneous reactions being closely coupled in space

Step 1

$$HD + H_2O\ (\text{vapor}) \underset{}{\overset{\text{catalyst}}{\rightleftharpoons}} H_2 + HDO\ (\text{vapour})$$

Step 2

$$HDO\ \text{vapour} + H_2O\ (\text{liquid}) \overset{\text{liquid water}}{\rightleftharpoons} HDO\ (\text{liquid}) + H_2O\ (\text{vapour}),\ \text{and}$$

b. recovering the said stream enriched in the hydrogen isotope, and wherein:

c. the catalyst packed bed assembly comprises:

i. a catalyst structure comprising at least one carrier, catalyst crystallites of at least one catalytically active metal selected from Group VIII of the Periodic Table on the support, and a water repellent, water vapour and hydrogen gas permeable, porous, polymeric material partially enclosing the catalyst crystallites to substantially inhibit the contact of liquid water with the catalyst crystallites while allowing contact therewith of hydrogen gas and water vapour from the liquid water, and

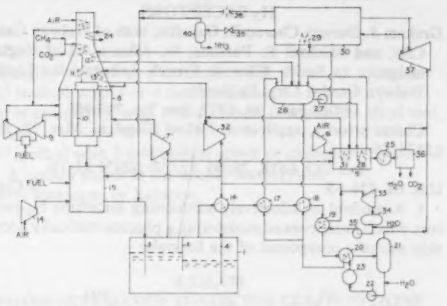
ii. a packing structure interspersed with (i) to form therewith the catalyst packed bed assembly across the whole path of the contacting streams, and having an exterior surface which is substantially hydrophilic and relatively noncatalytically active with regard to hydrogen isotope exchange between hydrogen gas and water vapour to that of the catalyst bodies, so that:

d. the hydrogen isotope exchange primarily occurs simultaneously between hydrogen gas and water vapour contacting the catalyst crystallites, and between water vapour contacting the liquid water and that liquid water, and the substantially hydrophilic exterior surface of the packing structure increases the contact surface area between the water vapour and liquid water thereby increasing the rate of hydrogen isotope exchange between water vapour and liquid water.

4,126,668
PRODUCTION OF HYDROGEN RICH GAS BY COMBINED STEAM REFORMING AND INTERMEDIATE OXIDATION-REDUCTION

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed May 23, 1975, Ser. No. 580,284
Int. Cl.[2] C01B *1/02, 1/08*
U.S. Cl. 423—657 12 Claims



1. A process for generating hydrogen which comprises

a. generating the hydrogen by intermediate oxidation-reduction, wherein at least one intermediate selected from the group consisting of iron, wustite, tin, and WO_2 is reacted with steam to produce the hydrogen and an oxide of the intermediate, and the intermediate oxide is reacted with a reducing gas to regenerate the intermediate, whereby an exhaust reducing gas is available;

b. oxidizing at least part of said exhaust reducing gas, whereby heat is released;

c. supplying said heat to an endothermic reforming reaction between steam and a light hydrocarbon, whereby a reformed reducing gas mixture is obtained;

d. using said reformed gas mixture as a source of at least part of said reducing gas in step a.

4,126,669
DIAGNOSTIC AGENT

Ulf S. E. Rothman, Höllviksnos, and Bernt J. Lindberg, Upsala, both of Sweden, assignors to Pharmacia Aktiebolag, Upsala, Sweden

Continuation of Ser. No. 583,212, Jun. 2, 1975, abandoned. This application Feb. 9, 1977, Ser. No. 767,197
Int. Cl.[2] A61K *29/00, 43/00*
U.S. Cl. 424—1 14 Claims

1. In the known diagnostic agent for intravascular administration into blood vessels composed of radioactively labelled particles suspended in a physiologically acceptable aqueous liquid, said particles having a size so selected that they clog fine blood vessels having a diameter within the range 5–300 μm, the improvement which comprises said particles consisting of a three-dimensional, water-insoluble, hydrophilic, swellable, cross-linked network of polysaccharide substances, said network being composed of

a polysaccharide substance selected from the group consist-

ing of starch, amylose, amylopectin, glycogen, and dextrin,

cross-linking having been effected by ether bonds that form bridges between polysaccharide substances, said bridges being straight or branched aliphatic saturated hydrocarbon chains substituted with one to six hydroxyl group and containing 3 - 20 carbon atoms and being unbroken or broken with one to six oxygen atoms,

the total substitution degree for the polysaccharide being lower than 70% and higher than 5%, said substitution degree being given as the percentage of the number of substituted glucose units with respect to the total number of glucose units present,

said three-dimensional network being degradable by the α-amylase in blood plasma into water-soluble fragments and said cross-linked polysaccharide substance swelling to a gel in the presence of water, said gel containing more than 50% and less than 99.5% by weight of water.

4,126,670

METHOD OF STIMULATING HISTAMINE H_2-RECEPTORS

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and Michael E. Parsons, St. Albans, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

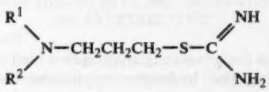
Filed Mar. 24, 1977, Ser. No. 780,950

Claims priority, application United Kingdom, Mar. 29, 1976, 12476/76

Int. Cl.[2] A61K *29/00, 31/17;* **G01N** *33/16*

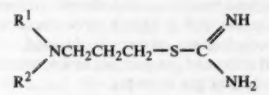
U.S. Cl. 424—9 **6 Claims**

1. A method of selectively stimulating histamine H_2-receptors which comprises administering a pharmaceutically acceptable salt of a compound of the formula:



wherein R^1 and R^2 which may be the same or different are methyl or ethyl, to an animal in an amount sufficient to stimulate said receptor.

2. A method of diagnosing gastric secretory capacity which comprises administering a pharmaceutically acceptable salt of compound of the formula:



wherein R^1 and R^2, which may be the same or different, are methyl or ethyl, internally to an animal in an amount sufficient to test the gastric secretory activity and to detect achlorhydria.

4,126,671

METHOD FOR DETECTING BOVINE LEUKEMIA VIRAL INFECTION

James A. House, and Carol House, both of Pipersville, Pa., assignors to Pitman-Moore, Inc., Washington Crossing, N.J.

Filed Aug. 17, 1976, Ser. No. 715,343

Int. Cl.[2] C12K *1/00;* **G01N** *31/00, 33/16*

U.S. Cl. 424—12 **29 Claims**

1. An immunological composition for detecting bovine leukemia virus infection in a bovine animal comprising:

(1) an ether-labile antigen extracted from cell cultures infected with bovine leukemia virus; in homogeneous admixture with

(2) a semi-solid gel medium;

said composition being in the form of a thin layer and having at least one well therein adapted to receive a test specimen of an animal suspected of infection by said virus.

4,126,672

SUSTAINED RELEASE PHARMACEUTICAL CAPSULES

Prabhakar R. Sheth, Pearl River, N.Y., and Jacques L. Tossounian, Pine Brook, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 655,302, Feb. 4, 1976, abandoned, which is a division of Ser. No. 559,107, Mar. 17, 1975, abandoned. This application Sep. 19, 1977, Ser. No. 834,347

Int. Cl.[2] A61K *9/52, 9/26*

U.S. Cl. 424—22 **4 Claims**

1. A sustained release pharmaceutical capsule containing benzodiazepine selected from the group consisting of chloriazepoxide and diazepam in a formulation hydrodynamically balanced so that, upon contact with gastric fluid, said formulation acquires and maintains a bulk density of less than 1 thereby being buoyant in said fluid and remaining buoyant in the gastric fluid of the stomach until substantially all of said benzodiazepine contained therein has been released, said formulation comprising a finely particulate, homogeneous mixture of said benzodiazepine; from about 5% by weight to about 60% by weight of therapeutically inert, pharmaceutically acceptable adjunct materials, from 0% by weight to about 60% by weight of a fatty material having a specific gravity of less than one and from about 20% by weight to about 75% by weight of one or a mixture of hydrocolloids selected from the group consisting of methyl cellulose, hydroxypropylcellulose, hydroxypropylmethylcellulose, hydroxymethylcellulose and sodium-carboxymethylcellulose to provide, upon contact with gastric fluid, a water-impermeable barrier on the surface of said formulation.

4,126,673

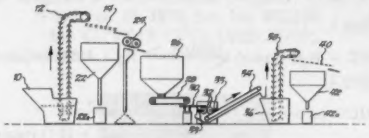
METHOD FOR PROCESSING DROSS

Paul J. Cromwell, Williamsville, N.Y., assignor to Cromwell Metals, Inc., Ashtabula, Ohio

Continuation-in-part of Ser. No. 796,729, May 13, 1977, abandoned. This application May 8, 1978, Ser. No. 902,481

Int. Cl.[2] B02C *23/14*

U.S. Cl. 241—14 **38 Claims**



1. A method for reclaiming, in relatively high metallic concentrate form, metallic substances entrained in dross, said method comprising the steps of:

conveying said dross to a pair of roller means having a predetermined spacing, said dross comprising particles of a predetermined size range,

compressing said dross to a limited degree without substantially crushing the same between said pair of roller means by passing said dross therebetween so as to substantially break the bonds between the metallic and non-metallic substances in said dross,

milling said dross after passage thereof through said pair of roller means so as to disassociate said metallic and non-metallic substances one from the other, and

separating said non-metallic substances from said metallic substances so that relatively high metallic concentrates remain whereby metallic dust-like particles become disassociated from said metallic substances and are commingled with said non-metallic substances after separation of the latter from said metallic substances.

4,126,674
THICKENED AQUEOUS SHAMPOO COMPOSITIONS CONTAINING ENCAPSULATED CONDITIONING AGENTS

Jack J. Mausner, East Hills, N.Y., assignor to Helena Rubinstein, Inc., New York, N.Y.

Continuation of Ser. No. 685,335, May 11, 1976, abandoned.
This application Sep. 22, 1977, Ser. No. 835,645
Int. Cl.[2] A61K *7/08, 7/50;* **C11D** *3/46, 17/08*
U.S. Cl. 424—31 **11 Claims**

1. A shampoo-hair conditioning composition, comprising, in combination:

(A) an effective amount of at least one surfactant for shampooing the hair, said surfactant comprising triethanolamine lauryl sulfate and polyoxyethylene polyoxypropylene polyoxyethylene in a ratio of from 3:0.9 to 30:0.9,

(B) discrete visible capsules of an encapsulated oil in an amount effective to condition the hair,

(C) a thickened acqueous vehicle comprising an effective amount of a carboxy vinyl polymer thickener.

4,126,675
NAIL POLISHES

Jean Boulogne, L'Hay les Roses, and Christos Papantoniou, Epinay sur Seine, both of France, assignors to L'Oreal, Paris, France

Filed May 9, 1977, Ser. No. 795,372
Claims priority, application France, May 13, 1976, 76 14430
Int. Cl.[2] A61K *7/04;* **C08L** *33/10*
U.S. Cl. 424—61 **15 Claims**

1. A nail polish comprising a resin, a plasticizer, a solvent system and a filming agent, wherein the resin comprises a copolymer of 10 to 95% by weight methyl methacrylate and of 5 to 90% by weight hexyl methacrylate.

4,126,676
MODIFIED NEUROTOXIN DERIVED FROM NAJA GENUS SNAKE VENOM

Murray J. Sanders, 3009 Spanish Trail, Delray Beach, Fla. 33444

Filed Jul. 22, 1977, Ser. No. 818,152
Int. Cl.[2] A61K *35/58*
U.S. Cl. 424—98 **14 Claims**

1. A method of treatment of animals suffering from a progressive degenerative neurological disease of motor nerve cell origins to neuromuscular junction, axones and nerve myelin sheaths comprising administering to the animal a disease mitigating amount of a detoxified and neurotropically active modified snake venom neurotoxin composition wherein the said snake venom neurotoxin is derived from the venom of a species of the Naja genus, and wherein said composition exhibits at least a 30% inhibition of plaques in the Semliki Forest virus test and a bioassay shows that the composition is atoxic, as demonstrated by essentially no signs of toxicity in inoculated laboratory animals and in the Semliki Forest virus test.

11. A composition comprising an administrable form of a detoxified and neurotropically active modified snake venom neurotoxin wherein the said snake venom neurotoxin is derived from the venom of a species of the Naja genus, and wherein the composition exhibits at least a 30% inhibition of plaques in the Semliki Forest virus test and a bioassay shows that the composition is atoxic, as demonstrated by essentially no signs of toxicity in inoculated laboratory animals and in the Semliki Forest virus test.

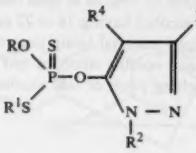
14. A method for producing the composition of claim 11 comprising oxygenating at a pH of above 7 and at a temperature of 15° C. to 40° C. the said snake venom until the venom is atoxic to the modified Semliki Forest virus test and then ceasing the oxygenation reaction.

4,126,677
O,S-DIALKYL-O-(1-CYANOALKYL-3-SUBSTITUTED)-PYRAZOL(5)YL-THIONOTHIOLPHOSPHORIC ACID ESTERS

Hellmut Hoffmann, Wuppertal, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 14, 1977, Ser. No. 768,504
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1976, 2608643
Int. Cl.[2] A01N *9/36;* **C07F** *9/65*
U.S. Cl. 424—200 **10 Claims**

1. An O,S-dialkyl-O-(1-cyanoalkyl-3-substituted)-pyrazol(-5)yl-thionothiol phosphoric acid ester of the formula



(I)

in which

R is alkyl with 1 or 2 carbon atoms,

R^1 is alkyl with 3 or 4 carbon atoms,

R^2 is cyanoalkyl with 1 to 4 carbon atoms in the alkyl moiety,

R^3 is alkyl with 1 to 4 carbon atoms or carbalkoxy with 1 to 4 carbon atoms in the alkoxy moiety, and

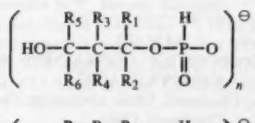
R^4 is hydrogen or halogen.

4,126,678
PHOSPHITE-BASED FUNGICIDE COMPOSITIONS

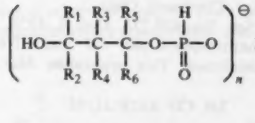
Stephane Trinh, Champagne au Mont d'Or; Alain Moraly, Lyons, and Jean-Michel Gaulliard, Orlienas, all of France, assignors to Philagro S.A., France

Division of Ser. No. 620,379, Oct. 7, 1975, Pat. No. 4,076,807.
This application Jun. 29, 1977, Ser. No. 811,387
Claims priority, application France, Aug. 10, 1974, 74 34529
Int. Cl.[2] A01N *9/36*
U.S. Cl. 424—217 **6 Claims**

1. A method for the protection of plants against fungal diseases of plants, which comprises applying to said plants a fungicidally effective amount of at least one compound having a formula selected from the group consisting of



and



in which

each of R_1, R_2, R_3, R_4, R_5 and R_6 may be identifical or different and represent hydrogen, an alkyl radical, or a halogenated alkyl radical containing from 1 to 5 carbon atoms,

M represents hydrogen, a metal selected from the group consisting of alkali metal, alkaline earth metal, iron, copper, zinc, manganese, nickel, cobalt, aluminum and mercury, an ammonium radical, alkyl-ammonium radical or alkanol-ammonium radical, and *n* is a whole number equal to the valency of M.

4,126,679

COSMETIC STICK

Peter F. Davy, Scottsdale, Ariz., and Michael L. Drolet, Crystal Lake, Ill., assignors to Armour-Dial, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 655, 665, Feb. 5, 1976, abandoned. This application Jan. 6, 1977, Ser. No. 757,405

Int. Cl.[2] A61K *7/34*

U.S. Cl. 424—66 16 Claims

1. A solid composition comprising about 15% to 40% of a powdered material suspended in a solid matrix comprising from 10% to 65% of one or more volatile silicone oils selected from the group consisting of a polydimethylcyclosiloxane having 3 to 6 silicon atoms and a linear polydimethylsiloxane having a viscosity of ten centistokes or less at 25° C. and mixtures thereof, and from 15% to 70% of at least one long chain water insoluble aliphatic alcohol having 16 to 22 carbon atoms in the chain, said powdered material being non-reactive with said long chain alcohol and volatile silicones and which does not decompose at the melting point of said alcohol.

4,126,680

TETRACYCLINE ANTIBIOTIC COMPOSITIONS

William W. Armstrong, Mill Neck, N.Y., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 27, 1977, Ser. No. 791,627

The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.

Int. Cl.[2] A61K *31/79, 31/65*

U.S. Cl. 424—80 24 Claims

1. A liquid composition comprising an aqueous solution of a tetracycline antibiotic in caprolactam or 2-piperidone, said tetracycline being selected from the group consisting of oxytetracycline in a concentration of from about 5 to 30% w/v, doxycycline in a concentration of from about 5 to 20% w/v, chlortetracycline in a concentration of from about 5 to 15% w/v, and the pharmaceutically acceptable acid addition salts thereof, with the proviso that when said tetracycline antibiotic is oxytetracycline or its pharmaceutically-acceptable acid addition salts the caprolactam or 2-piperidone is present in a concentration of from about 30 to 60% w/v, when said tetracycline antibiotic is doxycycline or its pharmaceutically-acceptable acid addition salts the caprolactam or 2-piperidone is present in a concentration of from about 50 to 70% w/v, and when said tetracycline antibiotic is chlortetracycline or its pharmaceutically-acceptable acid addition salts the caprolactam or 2-piperidone is present in a concentration of from about 60 to 70% w/v.

4,126,681

TOPICAL COMPOSITION CONTAINING ACETYL SALICYLIC ACID

Herbert H. Reller, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 638,773, Dec. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 566,506, Apr. 9, 1975, abandoned. This application Mar. 14, 1977, Ser. No. 777,192

Int. Cl.[2] A61K *31/61*

U.S. Cl. 424—234 13 Claims

1. An anti-inflammatory composition containing less than about 20% by weight water for topical application to inflamed tissue, comprising:

(a) from about 0.1% to about 10% by weight of monoolein;

(b) from about 40% to about 99% by weight of a diol having 3 or 4 carbon atoms;

(c) from about 0.5% to about 10% by weight of acetylsalicylic acid; and

(d) from about 0% to about 60% by weight of an alcohol having 2 or 3 carbon atoms.

4,126,682

7-ACYL-3-(CARBOXYALKYL AND CARBAMOYLALKYL SUBSTITUTED OXADIAZOLYLTHIOMETHYL) CEPHALOSPORINS AND ANTIBACTERIAL COMPOSITIONS AND METHODS EMPLOYING THEM

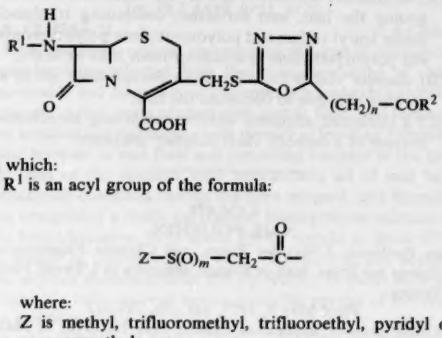
David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 682,948, May 3, 1976, Pat. No. 4,034,092. This application Mar. 18, 1977, Ser. No. 779,202

Int. Cl.[2] C07D *501/50;* A61K *31/545;* C07D *501/56*

U.S. Cl. 424—246 11 Claims

1. A compound of the formula:



in which:

R^1 is an acyl group of the formula:

where:

Z is methyl, trifluoromethyl, trifluoroethyl, pyridyl or cyanomethyl;

m is zero to two;

n is one to five; and

R^2 is hydroxy, amino, lower alkylamino or di(lower)alkylamino,

or non-toxic pharmaceutically acceptable salt thereof.

6. A pharmaceutical composition having antibacterial activity comprising a nontoxic, antibacterial quantity of a compound as claimed in claim 1 and a pharmaceutically acceptable carrier therefor.

7. A method of treating bacterial infections comprising administering internally by injection to an infected or susceptible warm-blooded animal an antibacterially effective but nontoxic dose of a compound as claimed in claim 1.

4,126,683

FUSED RING INDOLE DERIVATIVES AND ANTIDEPRESSANT COMPOSITIONS CONTAINING THEM

Alan C. White, Windsor, and Robert F. Sugden, High Wycombe, both of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

Filed Jun. 8, 1977, Ser. No. 804,648

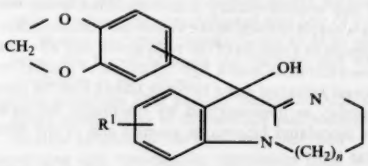
Claims priority, application United Kingdom, Jun. 11, 1976, 24272/76

Int. Cl.[2] A61K *31/505;* C07D *487/04*

U.S. Cl. 424—251 6 Claims

1. A compound selected from the group consisting of a fused ring indole derivative of formula

(I)



and a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof wherein *n* represents 1 and R^1 represents hydrogen, hydroxyl, lower alkyl, lower alkoxy, trifluoromethyl, halogen, amino or mono- or di(lower)alkylamino.

4,126,684

4-AMINO-3-p-HALOPHENYLBUTYRIC ACIDS AND THEIR DERIVATIVES USED IN THE CONTROL OF NARCOTIC ABUSE

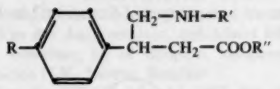
Ronald D. Robson, Mendham, and Jeffrey K. Saelens, North Brunswick, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 656,996, Feb. 11, 1976, abandoned. This application Dec. 8, 1976, Ser. No. 748,591

Int. Cl.[2] A61K *31/515, 31/195*

U.S. Cl. 424—254 7 Claims

1. A method for reducing either the addiction liability of an addicting agent, or the withdrawal symptoms caused by it, which consists in administering to a mammal in need of said agent, or suffering from withdrawal symptoms caused by the lack of it, enterally or parenterally a composition comprising: (A) an addicting amount of a member selected from the group consisting of a barbiturate and a narcotic agent, (B) a compound of the formula



wherein R is fluoro, chloro, bromo or the pseudohalogen trifluoromethyl, R′ is hydrogen, lower alkanoyl or phenyl-lower alkanoyl, and R″ is hydrogen, lower alkyl or phenyl-lower alkyl, or a salt of said acids or esters with therapeutically acceptable acids or bases, in an effective but non-muscle relaxing amount of between about 0.1 and 1 mg/kg/day and (C) a pharmaceutical excipient.

4,126,685

6-ARYL-PYRROLO[1,2,9]IMIDAZOLE DERIVATIVES WHICH POSSESS ANTI-HYPERTENSIVE ACTIVITY

Andrew Shaw, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

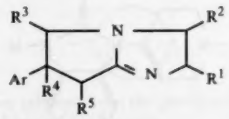
Division of Ser. No. 652,060, Jan. 26, 1976, Pat. No. 4,046,898. This application May 16, 1977, Ser. No. 797,349

Claims priority, application United Kingdom, Jan. 31, 1975, 4303/75

Int. Cl.[2] A61K *31/44, 31/415;* C07D *487/04*

U.S. Cl. 424—258 6 Claims

1. A compound selected from the group consisting of compounds of the formula:



wherein R^1, R^2, R^3 and R^5, which may be the same or different, each is hydrogen or alkyl of up to 4 carbon atoms, and wherein Ar is phenyl, naphthyl, thienyl, pyridyl or furyl which bears a substituent in the position adjacent to the linking position which substitutent together with the substituent R^4 forms alkylene of up to 3 carbon atoms, and which nucleus Ar either bears no further substituent or bears one or two further substituents selected from halogen, amino, nitro, trifluoromethyl and alkyl, alkoxy, acylamino and dialkylamino each of up to 6 carbon atoms; and the pharmaceutically-acceptable acid-addition salts thereof.

6. A method for lowering blood pressure in a warm-blooded animal which comprises administering to said animal an effective amount of a compound claimed in claim 1.

4,126,686

ANALGESIC 3-(3-METHYL-3-BUTENYL)-1,2,3,4,5,6-HEXAHYDRO-6,11-DIMETHYL-8-HYDROXY-2,6-METHANO-3-BENZAZOCINE

Kentaro Tamaki; Naoki Naito; Fumio Nishimura; Kyoichi Fujii, all of Sakai, and Nobuo Nakamura, Sunto, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Otemachi, Japan

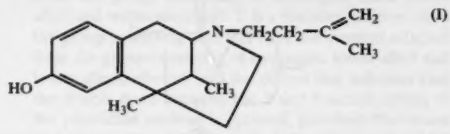
Filed Dec. 22, 1976, Ser. No. 753,331

Claims priority, application Japan, Jan. 1, 1976, 51-144; Jul. 12, 1976, 51-82750

Int. Cl.[2] C07D *221/26;* A61K *31/445*

U.S. Cl. 424—267 14 Claims

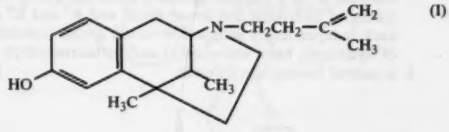
1. A compound represented by the formula:



(I)

or acid addition salts thereof.

2. An analgesic agent, comprising as an active ingredient an analgesically effective amount of a compound represented by the formula:



(I)

or acid addition salt thereof in association with a pharmaceutically acceptable carrier or excipient.

12. A method of alleviating pain in a mammal comprising administering to a mammal in need of such treatment the composition of claim 2.

4,126,687

ANTIEMETIC, 1-(BENZIMIDAZOLYL-ALKYL)-PIPERIDINE DERIVATIVES

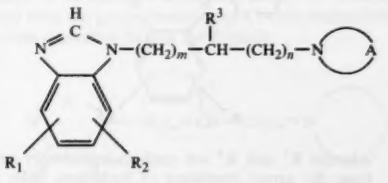
Jan Vandenberk, Beerse; Ludo E. J. Kennis, Vosselaar; Marcel J. M. C. Van der Aa, Vosselaar, and Albert H. M. Th. Van Heertum, Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 687,139, May 17, 1976, Pat. No. 4,066,772, which is a continuation-in-part of Ser. No. 597,793, Jul. 21, 1975, abandoned. This application Jul. 20, 1977, Ser. No. 817,396

Int. Cl.[2] A61K *31/445;* C07D *401/06, 401/14*

U.S. Cl. 424—267 10 Claims

1. A chemical compound selected from the group consisting of a 1-(benzimidazolylalkyl)piperidine derivative having the formula:



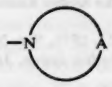
and the pharmaceutically acceptable acid addition salts thereof, wherein:

R^1 and R^2 are each independently selected from the group

consisting of hydrogen, halo, lower alkyl and trifluoromethyl;

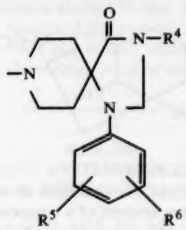
R^3 is a member selected from the group consisting of hydrogen and methyl;

m and *n* are each an integer of from 1 to 2 inclusive; and the radical



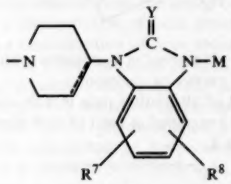
is a member selected from the group consisting of:

a. a radical having the formula:



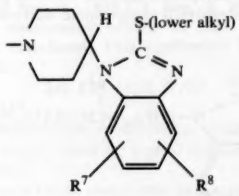
wherein R^4 is a member selected from the group consisting of hydrogen and lower alkyl; and R^5 and R^6 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl;

b. a radical having the formula:



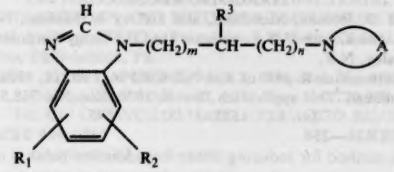
wherein R^7 and R^8 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl; Y is a member selected from the group consisting of O and S; M is a member selected from the group consisting of hydrogen, lower alkyl and lower alkylcarbonyl; and the dotted line indicates that the double bond between the 3 and 4 carbon atoms of the piperidine nucleus is optional, provided that when said Y is S, then there is a single bond between said 3 and 4 carbon atoms of the piperidine nucleus, and then said M is hydrogen; and

c. a radical having the formula:



wherein R^7 and R^8 are each independently selected from the group consisting of hydrogen, halo, lower alkyl, and trifluoromethyl.

9. A method of inhibiting emesis which comprises the systemic administration in warm-blooded animals in need of such treatment of an effective antiemetic amount of a compound selected from the group consisting of a 1-(benzimidazolylalkyl)piperidine derivative having the formula:

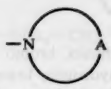


and the pharmaceutically acceptable acid addition salts thereof, wherein:

R^1 and R^2 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl;

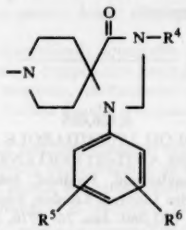
R^3 is a member selected from the group consisting of hydrogen and methyl;

m and *n* are each an integer of from 1 to 2 inclusive; and the radical



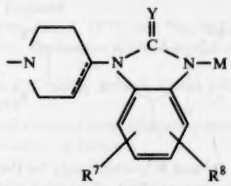
is a member selected from the group consisting of:

a. a radical having the formula:



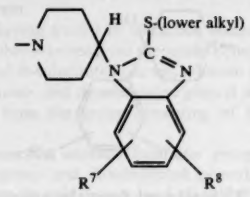
wherein R^4 is a member selected from the group consisting of hydrogen and lower alkyl; and R^5 and R^6 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl;

b. a radical having the formula:



wherein R^7 and R^8 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl; Y is a member selected from the group consisting of O and S; M is a member selected from the group consisting of hydrogen, lower alkyl and lower alkylcarbonyl; and the dotted line indicates that the double bond between the 3 and 4 carbon atoms of the piperidine nucleus is optional, provided that when said Y is S, then there is a single bond between said 3 and 4 carbon atoms of the piperidine nucleus, and then said M is hydrogen; and

c. a radical having the formula:



wherein R^7 and R^8 are each independently selected from the group consisting of hydrogen, halo, lower alkyl, and trifluoromethyl.

4,126,688

ANTIEMETIC 1-(BENZOTRIAZOLYL-ALKYL)-PIPERIDINE DERIVATIVES

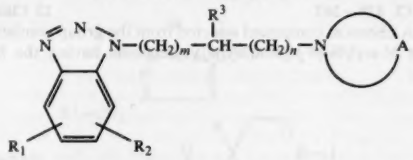
Jan Vandenberk, Beerse; Ludo E. J. Kennis, Vosselaar; Marcel J. M. C. Van der Aa, Vosselaar, and Albert H. M. Th. Van Heertum, Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 687,139, May 17, 1967, Pat. No. 4,066,772, which is a continuation-in-part of Ser. No. 597,793, Jul. 21, 1975, abandoned. This application Jul. 20, 1977, Ser. No. 817,397

Int. Cl.[2] **A61K** *31/445;* **C07D** *401/06, 401/14*

U.S. Cl. 424—267 **10 Claims**

1. A chemical compound selected from the group consisting of a 1-(benzatriazolylalkyl)piperidine derivative having the formula:

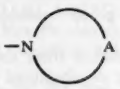


and the pharmaceutically acceptable acid addition salts thereof, wherein:

R^1 and R^2 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl;

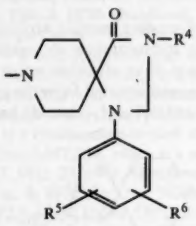
R^3 is a member selected from the group consisting of hydrogen and methyl;

m and *n* are each an integer of from 1 to 2 inclusive; and the radical



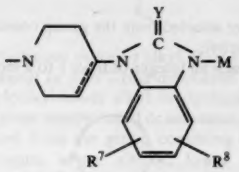
is a member selected from the group consisting of:

a. a radical having the formula:



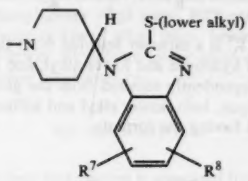
wherein R^4 is a member selected from the group consisting of hydrogen and lower alkyl; and R^5 and R^6 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl;

b. a radical having the formula:



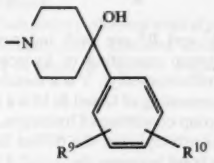
wherein R^7 and R^8 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl; Y is a member selected from the group consisting of O and S; M is a member selected from the group consisting of hydrogen, lower alkyl and lower alkylcarbonyl; and the dotted line indicates that the double bond between the 3 and 4 carbon atoms of the piperidine nucleus is optional, provided that when said Y is S, then there is a single bond between said 3 and 4 carbon atoms of the piperidine nucleus, and then said M is hydrogen;

c. a radical having the formula:



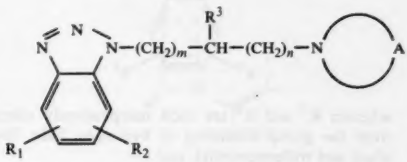
wherein R^7 and R^8 are each independently selected from the group consisting of hydrogen, halo, lower alkyl, and trifluoromethyl; and

d. a radical having the formula:



wherein R^9 is selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl, and R^{10} is selected from the group consisting of hydrogen and halo.

9. A method of inhibiting emesis which comprises the systemic administration in warm-blooded animals in need of such treatment of an effective antiemetic amount of a compound selected from the group consisting of a 1-(benzotriazolylalkyl)-piperidine derivative having the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

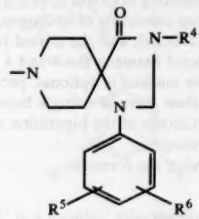
R^1 and R^2 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl;

R^3 is a member selected from the group consisting of hydrogen and methyl;

m and *n* are each an integer of from 1 to 2 inclusive; and the radical

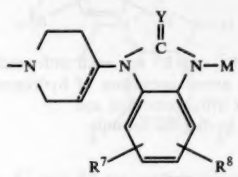
is a member selected from the group consisting of:

a. a radical having the formula:



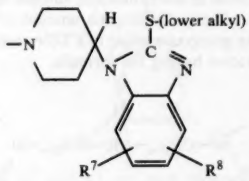
wherein R^4 is a member selected from the group consisting of hydrogen and lower alkyl; and R^5 and R^6 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl;

b. a radical having the formula:



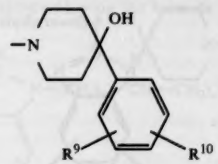
wherein R^7 and R^8 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl; Y is a member selected from the group consisting of O and S; M is a member selected from the group consisting of hydrogen, lower alkyl and lower alkylcarbonyl; and the dotted line indicates that the double bond between the 3 and 4 carbon atoms of the piperidine nucleus is optional, provided that when said Y is S, then there is a single bond between said 3 and 4 carbon atoms of the piperidine nucleus, and then said M is hydrogen;

c. a radical having the formula:



wherein R^7 and R^8 are each independently selected from the group consisting of hydrogen, halo, lower alkyl, and trifluoromethyl; and

d. a radical having the formula:



wherein R^9 is selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl, and R^{10} is selected from the group consisting of hydrogen and halo;

in admixture with a pharmaceutical carrier.

4,126,689

N-ARYL-N-(1-ALKYL-4-PIPERIDINYL)-ARYLACETAMIDES

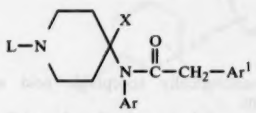
Stefan Sanczuk, Vosselaar, and Hubert K. F. Hermans, Gierle, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 713,756, Aug. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 615,131, Sep. 23, 1975, abandoned, which is a division of Ser. No. 700,351, Jun. 28, 1976, abandoned, and Ser. No. 700,352, Jun. 28, 1976, abandoned, and Ser. No. 700,635, Jun. 28, 1976, abandoned, and Ser. No. 700,636, Jun. 28, 1976, abandoned, and Ser. No. 700,637, Jun. 28, 1976, abandoned, and Ser. No. 700,638, Jun. 28, 1976, abandoned, and Ser. No. 700,694, Jun. 28, 1976, abandoned. This application May 11, 1977, Ser. No. 795,669

Int. Cl.[2] **C07D** *211/58;* **A61K** *31/445*

U.S. Cl. 424—267 **15 Claims**

1. A chemical compound selected from the group consisting of an N-aryl-N-(4-piperidinyl)arylacetamide having the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

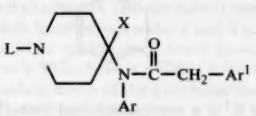
L is alkyl having from 1 to 10 carbon atoms;

Ar is a member selected from the group consisting of phenyl, mono- and di-substituted phenyl, wherein each substituent in said mono- and di-substituted phenyl is independently selected from the group consisting of halo and lower alkyl;

Ar^1 is a member selected from the group consisting of phenyl, mono- and di-substituted phenyl, wherein each substituent in said mono- and di-substituent phenyl is independently selected from the group consisting of halo, lower alkyl, hydroxy and lower alkyloxy; and

X is hydrogen.

13. A method of treating cardiac arrhythmia which comprises the systemic administration to warm-blooded animals having said condition of an effective anti-arrhythmic amount of a chemical compound selected from the group consisting of an N-aryl-N-(4-piperidinyl)arylacetamide having the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

L is alkyl having from 1 to 10 carbon atoms;

Ar is a member selected from the group consisting of phenyl, mono- and di-substituted phenyl, wherein each substituent in said mono- and di-substituted phenyl is independently selected from the group consisting of halo and lower alkyl;

Ar^1 is a member selected from the group consisting of phenyl, mono- and di-substituted phenyl, wherein each substituent in said mono- and di-substituted phenyl is independently selected from the group consisting of halo, lower alkyl, hydroxy and lower alkyloxy; and

X is hydrogen.

4,126,690

COMBATING ARTHROPODS WITH N,N-DIMETHYL-O-[3-(SUBSTITUTED-METHYL)-PYRAZOL-5-YL]-CARBAMIC ACID ESTERS

Fritz Maurer; Hans-Jochem Riebel, both of Wuppertal; Rolf Schröder, Velbert; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

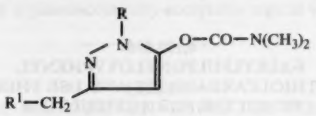
Filed Sep. 30, 1977, Ser. No. 838,425

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1976, 2644588; May 11, 1977, 2721188

Int. Cl.[2] **C07D** *231/22, 231/20;* **A01N** *9/22*

U.S. Cl. 424—273 P **8 Claims**

1. An N,N-dimethyl-O-[3-substitutedmethly)-pyrazol-5yl]-carbamic acid ester of the formula



in which

R is hydrogen, alkyl with 1 to 5 carbon atoms, cyanoalkyl with 1 to 4 carbon atoms in the alkyl radical or phenyl, and

Rhu 1 is alkoxy or alkylthio each with 1 to 6 carbon toms.

7. The method according to claim 6, wherein said compound is applied to a domesticated animal.

4,126,691

TERTIARY AMINOACIDS

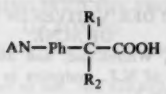
Richard W. J. Carney, New Providence, and George deStevens, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 307,293, Nov. 16, 1972, which is a continuation-in-part of Ser. No. 181,564, Sep. 17, 1971, Pat. No. 3,767,805, which is a continuation-in-part of Ser. No. 40,436, May 25, 1970, abandoned, which is a continuation-in-part of Ser. No. 8,406, Feb. 3, 1970, abandoned, which is a continuation-in-part of Ser. No. 856,154, Sep. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 843,244, Jul. 18, 1969, Pat. No. 3,641,040, which is a continuation-in-part of Ser. No. 808,343, Mar. 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 790,863, Jan. 13, 1969, abandoned, which is a continuation-in-part of Ser. No. 757,136, Sep. 3, 1968, Pat. No. 3,657,230, which is a continuation-in-part of Ser. No. 716,347, Mar. 27, 1968, abandoned. This application Dec. 6, 1976, Ser. No. 747,563

Int. Cl.[2] **A61K** *31/40;* **C07D** *209/44*

U.S. Cl. 424—274 **13 Claims**

1. An α-(cyclic tert. aminophenyl)-aliphatic acid corresponding to the formula



in which R_1 is hydrogen or lower alkyl, R_2 is hydrogen, lower alkyl, lower alkenyl or 3 to 7 ring-membered cycloalkyl, cycloalkenyl, cycloalkyl-lower alkyl or cycloalkenyl-lower alkyl, Ph is phenylene unsubstituted or substituted by one or two members selected from the group consisting of lower alkyl, hydroxy, mercapto, lower alkoxy, lower alkylmercapto, halogeno, trifluoromethyl, nitro, amino, di-lower alkylamino, lower alkanoylamino, cyano, carbamoyl, di-lower alkyl-carbamoyl, carboxy, lower alkylsulfonyl, sulfo, sulfamoyl and di-lower alkyl-sulfamoyl, and

AN–

is 4,5,6,7-tetrahydroisoindolino, 4,7-dihydroisoindolino or isoindolino, unsubstituted or substituted in the aromatic portion by one or two members selected from the group consisting of lower alkyl, lower alkoxy, lower alkylmercapto, halogeno, trifluoromethyl, nitro, amino and di-lower alkylamino; or a lower alkyl ester, lower alkenyl ester, 3 to 7 ring-membered cycloalkyl ester, cycloalkenyl ester, cycloalkyl-lower alkyl ester, cycloalkenyl-lower alkyl ester, HPh-ester, HPh-lower alkyl ester, hydroxy-lower alkyl ester, lower alkoxy-lower alkyl ester, di-lower alkylamino-lower alkyl ester, lower alkyleneimino-lower alkyl ester or

AN—lower alkyl ester

in which esters any hetero atom is separated from the carboxy-oxygen atom by at least 2 carbon atoms, the amide, thioamide, a mono- or di-lower alkylamide, mono- or di-lower alkyl-thioamide, lower alkyleneamide, lower alkylenethioamide, HPh-amide, HPh-thioamide, HPh-lower alkylamide, HPh-lower alkylthioamide or hydroxamic acid, the N-oxide, a lower alkyl quaternary, HPh-lower alkyl quaternary or a therapeutically acceptable salt thereof.

13. An anti-inflammatory pharmaceutical composition comprising an anti-inflammatory effective amount of the compound as claimed in claim 1, together with a pharmaceutical excipient.

4,126,692

SUBSTITUTED 3-OXO-6-THIA-2-AZABICYCLO [2.2.0] HEXANES

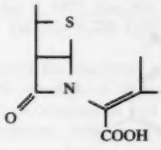
Frank P. Di Ninno, Old Bridge, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 28, 1977, Ser. No. 855,492

Int. Cl.[2] **C07D** *513/08*

U.S. Cl. 424—275 **2 Claims**

1. A compound having the structure:



and its pharmaceutically acceptable salts and esters.

4,126,693

RETINOIC ACID DERIVATIVES IN THE TREATMENT OF ACNE

Robert J. Gander, Whitehouse, and John A. Gurney, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 628,185, Nov. 3, 1975, Pat. No. 4,055,659. This application Aug. 5, 1977, Ser. No. 822,284
Int. Cl.[2] A61K *31/215;* C07D *317/44*
U.S. Cl. 424—282 **9 Claims**

1. N-(3,4-Methylenedioxyphenylmethyl)-all-trans-retinamide.

6. A method for treatment of acne in a subject requiring such treatment which comprises topical application to the acne site of said subject of a composition comprising an effective acne-treatment amount of N-(3,4-methylenedioxyphenylmethyl)-all-trans-retinamide admixed with a pharmaceutically-acceptable topical vehicle.

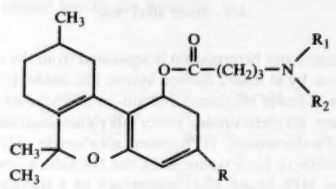
4,126,694

COMPOSITION AND METHOD FOR TREATING GLAUCOMA

Raj K. Razdan, Belmont; Haldean C. Dalzell, Weston, and Harry G. Pars, Lexington, all of Mass., assignors to SISA Incorporated, Cambridge, Mass.

Filed Jan. 27, 1977, Ser. No. 762,832
Int. Cl.[2] A61K *31/35*
U.S. Cl. 424—283 **4 Claims**

1. The method of treating wide-angle glaucoma which comprises applying topically to the eye from 0.00003 to 3.3 mg/kg of body weight of a compound of the formula



in which R, R_1 and R_2 are alkyl having from 1 to 4 carbon atoms or acid addition salts thereof.

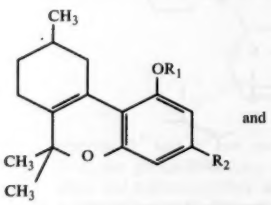
4,126,695

ANTI-GLAUCOMA COMPOSITION AND METHOD

Raj K. Razdan, Belmont; Haldean C. Dalzell, Weston; Barbara Z. Terris, Newton, and Harry G. Pars, Lexington, all of Mass., assignors to SISA Incorporated, Cambridge, Mass.

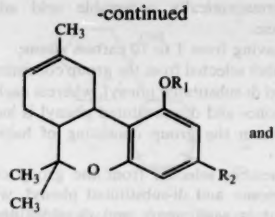
Filed Jan. 27, 1977, Ser. No. 762,833
Int. Cl.[2] A61K *31/35*
U.S. Cl. 424—283 **3 Claims**

1. The method of treating wide angle glaucoma which comprises applying topically to the eye from 0.00003 to 3.3 mg/kg of body weight of a compound selected from the group consisting of those having the structure

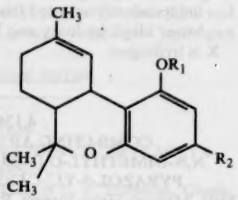


and

-continued



and



wherein R_1 is acetyl and R_2 is alkyl having 1 to 4 carbon atoms.

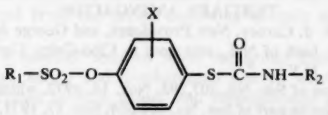
4,126,696

4-ALKYLSULFONYLOXYPHENYL N-ALKYLTHIOLCARBAMATES AND USE THEREOF AS FUNGICIDE FOR AGRICULTURE

Taizo Nakagawa; Toshiyuki Suzuki, both of Ageo; Yutaka Watanabe, Saitama; Kaoru Ohmori, Okegawa; Iwao Tejima; Osamu Yamada, both of Ageo, and Shuichi Ishida, Omiya, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

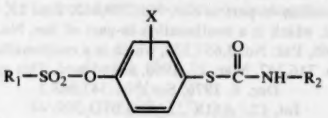
Continuation-in-part of Ser. No. 835,598, Sep. 22, 1977. This application Apr. 12, 1978, Ser. No. 895,545
Claims priority, application Japan, Sep. 2, 1977, 52-120362
Int. Cl.[2] C07C *153/11;* A01N *9/12*
U.S. Cl. 424—300 **9 Claims**

1. A compound having the formula



wherein each of R_1 and R_2 is a lower alkyl having from 1 to 6 carbon atoms and X is hydrogen, chlorine or methyl.

7. A method for killing the fungi which harm plants comprising applying to soil or seeds of plants with an fungicidally effective amount of a compound of the formula



wherein each of R_1 and R_2 is a lower alkyl having from 1 to 6 carbon atoms and X is hydrogen chlorine or methyl.

4,126,697

RETINOIC ACID DERIVATIVES IN THE TREATMENT OF ACNE

Robert J. Gander, Whitehouse, and John A. Gurney, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 628,185, Nov. 3, 1975, Pat. No. 4,055,659. This application Aug. 5, 1977, Ser. No. 822,283

Int. Cl.[2] A61K *31/215;* C11C *3/00*

U.S. Cl. 424—305 9 Claims

1. 4-(all-trans-retinoyloxyacetyl)-catechol.

6. A method for treatment of acne in a subject requiring such treatment which comprises topical application to the acne site of said subject of a composition comprising an effective acne-treatment amount of 4-(all-trans-retinoyloxyacetyl)-catechol admixed with a pharmaceutically-acceptable topical vehicle.

4,126,698

RETINOIC ACID DERIVATIVES IN THE TREATMENT OF ACNE

Robert J. Gander, Whitehouse, and John A. Gurney, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 628,185, Nov. 3, 1975, Pat. No. 4,055,659. This application Aug. 5, 1977, Ser. No. 822,285

Int. Cl.[2] A61K *31/215;* C11C *3/00*

U.S. Cl. 424—305 9 Claims

1. 2-Hydroxyethyl all-trans-retinoate.

6. A method for treatment of acne in a subject requiring such treatment which comprises topical application to the acne site of said subject of a composition comprising an effective acne-treatment amount of 2-hydroxyethyl all-trans-retinoate admixed with a pharmaceutically-acceptable topical vehicle.

4,126,699

RETINOIC ACID DERIVATIVES FOR THE TREATMENT OF ACNE

Robert J. Gander, Whitehouse, and John A. Gurney, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 628,185, Nov. 3, 1975, Pat. No. 4,055,659. This application Aug. 5, 1977, Ser. No. 822,286

Int. Cl.[2] A61K *31/215;* C11C *3/02*

U.S. Cl. 424—305 9 Claims

1. Mixed 2-hydroxy-1-propyl all-trans-retinoate and 1-hydroxy-2-propyl all-trans-retinoate.

6. A method for treatment of acne in a subject requiring such treatment which comprises topical application to the acne site of said subject of a composition comprising an effective acne-treatment amount of mixed 2-hydroxy-1-propyl all-trans-retinoate and 1-hydroxy-2-propyl all-trans-retinoate.

4,126,700

AMINOPROPIONIC-ACIDS AS ECTOPARASITICIDES

Myron J. Lover, Mountainside; Arnold J. Singer, South Orange; Donald M. Lynch, Waldwick, and William E. Rhodes, III, Cranford, all of N.J., assignors to Block Drug Company, Inc., Reed & Carnrich Division, Kenilworth, N.J.

Filed May 13, 1977, Ser. No. 796,545

Int. Cl.[2] A01N *9/20*

U.S. Cl. 424—319 7 Claims

1. A method of controlling ectoparasites or their ova which comprises topically applying to a human or animal in need of such control, an effective toxic amount of at least one N-fatty-β-aminopropionic acid for a time sufficient to kill at least 50% of the lice or ova thereon, wherein said fatty substituent is an alkyl moiety containing 8 to 24 carbon atoms.

4,126,701

PROCESS OF SPARING POULTRY FROM THE EFFECT OF TOXINS

Gregg W. Taylor, Murrayville, Ga., assignor to A.H.P., Inc., Gainesville, Ga.

Continuation-in-part of Ser. No. 625,693, Oct. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 595,876, Jul. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 454,000, Mar. 22, 1974, Pat. No. 3,915,637, which is a continuation-in-part of Ser. No. 342,290, Mar. 16, 1973, Pat. No. 3,916,027. This application Jul. 8, 1977, Ser. No. 814,100

Int. Cl.[2] A61K *31/14*

U.S. Cl. 424—329 7 Claims

1. A method for sparing poultry from the toxic effect of a mycotoxin in a complete poultry feed which comprises feeding said complete poultry feed to said poultry, said complete feed consisting of (i) gentian violet, and (ii) the remainder medically inert ingredients, said gentian violet sparing said poultry from the effect of said mycotoxin in said feed as a contaminant, the gentian violet being present in said feed in an amount between 0.00077 and 0.00385 by weight based on the weight of said feed.

4,126,702

NOVEL DERIVATIVES OF GLYCEROL

Guy Vanlerberghe, Montjay-la-Tour, and Henri Sebag, Paris, both of France, assignors to L'Oreal, Paris, France

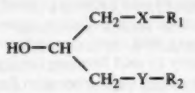
Division of Ser. No. 451,593, Mar. 15, 1974, Pat. No. 3,972,914. This application May 28, 1976, Ser. No. 691,088

Claims priority, application Luxembourg, Mar. 22, 1973, 67263

Int. Cl.[2] C11C *3/02;* A61K *47/00*

U.S. Cl. 424—365 28 Claims

1. A bi-substituted derivative of glycerol having the formula



wherein

X and Y are both —O—,

R_1 is branched alkyl radical having from 5 to 8 carbon atoms, the number of carbon atoms in the branch being 1, 2 or 3, and

R_2 is a linear alkyl radical having from 11 to 18 carbon atoms, and mixtures thereof.

4,126,703

ANIMAL FEED SYSTEM

Dil G. Barnett, Cedartown, Ga., assignor to Collard Valley Research, Inc., Carrolton, Ga.

Filed May 6, 1977, Ser. No. 794,402

Int. Cl.[2] A23K *1/00*

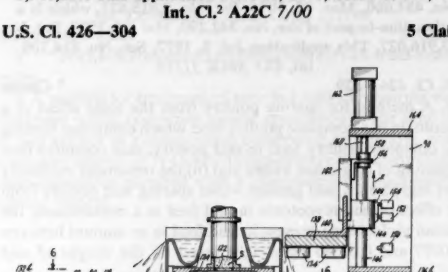
U.S. Cl. 426—2 8 Claims

1. A dry feed ration for ruminant animals comprising a mixture of about 52% by weight of fibrous forage plants, about 36% by weight of grain concentrate and up to about 3.6% by weight of dry precipitate dust from the manufacture of portland cement, said ration having a crude protein content of as low as about 8% by weight.

4,126,704
METHOD FOR FORMING A SHAPED COMESTIBLE

John P. McCarthy, College Point; John Moyer, Garden City, both of N.Y., and Leonard Fischer, Elkridge, Md., assignors to DCA Food Industries Inc., New York, N.Y.

Continuation of Ser. No. 641,072, Dec. 15, 1975, abandoned, which is a division of Ser. No. 491,468, Jul. 23, 1974, Pat. No. 3,940,217. This application Nov. 16, 1977, Ser. No. 852,062
Int. Cl.[2] A22C 7/00
U.S. Cl. 426—304 5 Claims



1. A method of forming a shaped comestible, from a slurry of a gellable solid foodstuff containing a gel-forming material, comprising the steps of providing a supply of said slurry containing said gel-forming material, providing at least one forming cavity in a forming plate of a predetermined configuration defining a predetermined volumetric space within the forming plate, providing a forming station which includes a backing plate which has one surface bounding one side of said forming plate so as to close one side of said cavity when said cavity and forming plate are located at said forming station, metering an amount of said slurry substantially equal in volumetric amount to said predetermined volumetric space within said forming plate, wetting the perimeter of said forming cavity and wetting the bounding surface of said backing plate at the cavity with an agent which functions as a gellation agent and as a release agent, then supplying said metered predetermined volumetric amount of said slurry to said forming cavity when said cavity is located at said forming station so as to form said slurry into the configuration of said forming cavity and to thereby coat with said agent the periphery and one side of said slurry supplied to said cavity, thereafter coating the remaining side of said slurry with said agent; thereby coating the entire surface of slurry supplied to said forming cavity with said agent and thereby gelling the entire surface of said slurry and forming a product, transporting said filled forming cavity including said formed product to a removing station, and removing said formed product from said forming cavity at said removing station.

4,126,705
PROCESS FOR MAKING A DEHYDRATED PROTEIN SNACK FOOD

Paul W. Hait, Saratoga, Calif., assignor to Aroma Taste, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 712,740, Aug. 9, 1976, abandoned, which is a continuation of Ser. No. 544,399, Jan. 27, 1975, abandoned. This application Nov. 15, 1977, Ser. No. 851,674
Int. Cl.[2] A23B 4/04
U.S. Cl. 426—314 19 Claims

1. A process for making a dehydrated protein snack food of desirable texture and chewability from raw protein material including animal meat, poultry, fish, vegetable protein, and all mixtures thereof, comprising the steps of:

(a) cutting a mass of raw protein material while in frozen conditions into thin slices without grinding,

(b) thawing the slices of raw protein material at room temperature,

(c) intimately admixing the thawed slices of raw protein material and its juices with a flavoring composition to impart a flavor thereto,

(d) maintaining the mixture of slices of flavored protein material and its juices at a temperature above freezing and in the absence of entrapped air for a period of time sufficient to achieve thorough penetration of the flavoring composition,

(e) freezing the mixture of flavored protein slices and juices into a solid compact mass,

(f) cutting the solid mass of flavored protein slices and juices into sections, and

(g) dehydrating said sections to a predetermined desired moisture level.

4,126,706
PROCESS FOR FORMING DOUGH RIBBON

Barney W. Hilton, Dallas, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Aug. 30, 1976, Ser. No. 718,915
Int. Cl.[2] A23L 1/01
U.S. Cl. 426—438 31 Claims

1. A method of forming a dough ribbon which comprises passing through a compression auger zone a composition comprising farinaceous solids and water to provide said composition as a dough of desired consistency from said auger zone, passing said dough to a positive displacement pumping zone, pumping said dough from said pumping zone by positive displacement through an opening having a restricted cross-sectional area to form said dough ribbon at a substantially constant rate which is substantially less than the theoretical volume of dough that would be discharged from said auger zone at the speed of said auger at 100% efficiency, and controlling said auger zone to maintain the quality of said dough ribbon.

18. A method of forming cooked dough pieces which comprises passing through a compression auger zone a composition comprising farinaceous solids and water to provide said composition as a dough of desired consistency from said auger zone, passing said dough to a positive displacement pumping zone, pumping said dough from said pumping zone by positive displacement through an opening having a restricted cross-sectional area to form said dough ribbon at a substantially constant rate which is substantially less than the theoretical volume of dough that would be discharged from said auger zone at the speed of said auger at 100% efficiency, controlling said auger zone to maintain the quality of said dough ribbon forming said ribbon into a plurality of narrower, adjacent strips of dough, cooking said strips of dough in integral lengths sufficient to form a plurality of cooked pieces of smaller, predetermined size, and forming the cooked lengths of dough into said pieces.

19. The method of claim 18 in which said lengths are submerged in hot oil while being fried in a restrained configuration.

4,126,707
METHOD OF PROCESSING GRAIN

Edwin R. Hart, P.O. Box 665, McKinney, Tex. 75069

Filed Oct. 4, 1976, Ser. No. 729,376
Int. Cl.[2] A23L 1/10, 1/20
U.S. Cl. 426—462 12 Claims

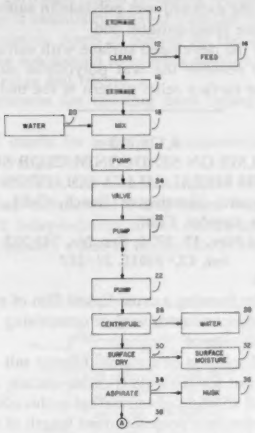
1. A method of processing grain comprising the steps of:

mixing water with the grain to form a slurry;

pumping the slurry successively through a plurality of pump stages, each stage having a turbine pump and a turbine pump impeller, in each turbine pump, raised to provide sufficient clearance so that the pump will pass the grain as

a whole kernel and separate the husks from the kernels without cracking a substantial percentage of the kernels;

centrifuging the slurry to remove the water from the grain;



surface drying the grain; and then

aspirating the grain to remove the husks from the kernels.

4,126,708

FLAVORING WITH 2-ACYL-5-SUBSTITUTED THIATETRAHYDROFURAN-4-ONES

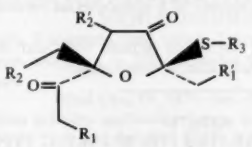
Braja D. Mookherjee, Holmdel; William J. Evers, Middletown, both of N.J., and Alfred E. Goossens, New York, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 819,888, Jul. 28, 1977, Pat. No. 4,092,333. This application Mar. 17, 1978, Ser. No. 887,629

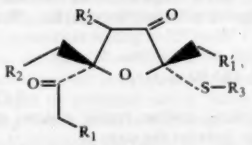
Int. Cl.[2] A23L *1/226, 1/234*

U.S. Cl. 426—535 **2 Claims**

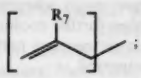
1. A process for augmenting or enhancing the organoleptic properties of foodstuffs comprising the step of adding thereto 0.01 parts per million up to about 100 parts per million based on total composition of one or more 2-acyl-5-substituted thiatetrahydrofuran-4-one compounds selected from the group of compounds having the structures:



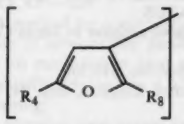
and;



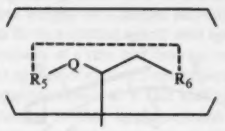
wherein R_1, R_2, R_1' and R_2' are the same or different and each is selected from the group consisting of hydrogen and methyl and R_3 is selected from the group consisting of C_1–C_9 alkyl; benzyl; phenyl; substituted or unsubstituted allyl having the structure:



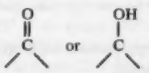
3-furyl substituted or unsubstituted having the structure:



oxy or hydroxy alkyl having the structure:



wherein Q is



and R_5 and R_6 are the same or different lower alkyl taken separately or, taken together, R_5 and R_6 complete a cyclialkyl ring; and wherein each of R_4, R_7 and R_8 are the same or different and are hydrogen or methyl.

4,126,709

METHOD FOR EXTRACTING CAROTENOID PIGMENTS FROM CITRUS OILS

Joseph D. Johnson, Longwood; Hector E. Viale, Ocala, and Donald M. Wait, Winter Park, all of Fla., assignors to Citrus Central, Inc., Orlando, Fla.

Filed Feb. 18, 1977, Ser. No. 769,872

Int. Cl.[2] A23L *1/27*

U.S. Cl. 426—540 **19 Claims**

1. A solvent-free method for deriving carotenoids from citrus fruit, comprising the steps of:

mechanically extracting oil from the flavedo of the fruit;

winterizing said oil to remove the sterols and other unwanted waxes from said oil;

removing limonene from said dewaxed oil by evaporation; and thereafter

distilling said oil under vacuum to accomplish separation of said carotenoids from the remaining constituents.

4,126,710

PROCESS FOR PREPARING SAUCE MIXES

Raymond A. Jaworski, Norwalk, and Mark G. Paulson, Westport, both of Conn., assignors to Standard Brands Incorporated, New York, N.Y.

Filed Jun. 27, 1977, Ser. No. 810,134

Int. Cl.[2] A23L *1/195*

U.S. Cl. 426—589 **14 Claims**

1. A process for preparing a sauce mix comprising forming a mixture by heating fat to an elevated temperature range and adding thereto a particulate moisture-containing farinaceous material, maintaining the mixture substantially within said elevated temperature range for a time sufficient to evaporate a substantial portion of said moisture and to obtain a thick particulate mixture having a dough-like consistency wherein the

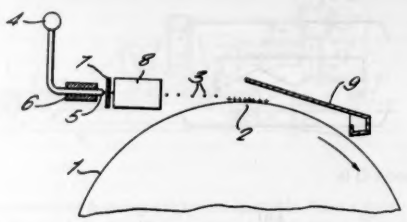
farinaceous particles are coated with the liquid fat, cooling the heated mixture to within a temperature range wherein the mixture reverts to a liquefied state and then further cooling the mixture to form a plastic mass wherein farinaceous particles and crystallized fat glycerides are interspersed.

4,126,711

CHARGE PATTERN DEVELOPMENT METHOD AND APPARATUS

Richard Z. Marlow, London, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 4, 1975, Ser. No. 610,356
Claims priority, application United Kingdom, Sep. 24, 1974, 41415/74
Int. Cl.[2] G03G *13/10, 15/10*
U.S. Cl. 427—15 **14 Claims**



1. A method of developing a charge pattern on a moving arcuate imaging surface which comprises:

a. producing a stream of electrically charged droplets of substantially regular size and spacing, the droplets having a charge polarity opposite that of the charge pattern, the stream having a path in a plane substantially parallel to a tangent to the imaging surface such that the droplets pass within less than about 0.020 inch of the surface;

b. providing deflecting electrodes on opposite sides of the stream in said plane substantially parallel to said tangent to said imaging surface; and

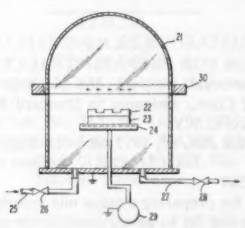
c. applying an alternating electric voltage to the deflecting electrodes to deflect the charged droplets in said plane, said charged droplets having a charge sufficient to cause at least a portion of the droplets to be drawn to said imaging surface by the charge pattern thereon.

4,126,712

METHOD OF TRANSFERRING A SURFACE RELIEF PATTERN FROM A WET POLY(OLEFIN SULFONE) LAYER TO A METAL LAYER

Eugene S. Poliniak, Willingboro, and Nitin V. Desai, Edison, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 30, 1976, Ser. No. 710,134
Int. Cl.[2] B05D *3/06*
U.S. Cl. 427—41 **6 Claims**



1. A method for forming a surface relief pattern in a metal layer which comprises:

a. dissolving a poly(olefin sulfone) in a solvent;

b. applying the resultant solution to a metal layer to form a wet poly(olefin sulfone) layer on the metal layer;

c. exposing the wet poly(olefin sulfone) layer to a modulated beam of electrons;

d. developing the exposed wet poly(olefin sulfone) layer to form a surface relief pattern; and

e. bombarding the developed surface with sufficient ions to substantially remove the wet poly(olefin sulfone) layer and form the surface relief pattern in the metal layer.

4,126,713

FORMING FILMS ON SEMICONDUCTOR SURFACES WITH METAL-SILICA SOLUTION

Raymond DiBugnara, Huntington Beach, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Nov. 15, 1976, Ser. No. 741,793
Int. Cl.[2] H01L *21/283*
U.S. Cl. 427—88 **17 Claims**

1. A method for forming a cross-linked film of a metal chloro-silicate on a semiconductor surface comprising the steps of:

a. forming a mixture of

i. an alcohol solution of a metal chloride salt and a cross-linking agent for tetra-ethyl-ortho-silicate; and

ii. an alcohol solution of tetra-ethyl-ortho-silicate;

b. aging said mixture a predetermined length of of time so as to permit said tetra-ethyl-ortho-silicate to partially cross-link;

c. coating said surface with said mixture; and

d. drying said mixture so as to form said cross-linked film of said metal chloro-silicate on said surface.

4,126,714

PROCESS FOR TREATING CHROMIUM DIOXIDE

Robert S. Haines, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 638,795, Dec. 8, 1975, abandoned. This application Jun. 30, 1977, Ser. No. 811,922
Int. Cl.[2] H01F *10/02*
U.S. Cl. 427—127 **18 Claims**

1. A process for treating ferromagnetic chromium dioxide having detrimental chromium trioxide adsorbed or attached to its surface, including the steps of:

providing chromium dioxide essentially free of water,

treating said chromium dioxide with a peroxide compound in a nonacqueous solution of a first solvent to convert the chromium trioxide to a reaction product,

removing said first solvent,

heating the resulting chromium dioxide to convert said reaction product to a resulting product, at least one component of which is soluble in a nonacqueous second solvent, and

treating the resulting chromium dioxide with said second solvent to remove said soluble component.

4,126,715

METHOD AND APPARATUS FOR REINKING TYPING RIBBON CARTRIDGES

William M. Schiffmacher, and J. Eugene Harold Knutson, both of Boulder, Colo., assignors to United Recycle, Inc., Boulder, Colo.

Filed Mar. 28, 1977, Ser. No. 781,763
Int. Cl.[2] B41J *31/14*
U.S. Cl. 427—141 **7 Claims**

1. A method for reinking endless typing ribbons stored within a cartridge which includes the steps of

a. positioning and mounting the cartridge in suitable position for reinking the ribbon,

b. threading the ribbon from the cartridge partially around and in contact with an ink applying drum located exteriorly of the cartridge,

c. guiding the ribbon around a driven capstan,

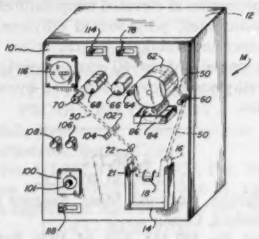
d. returning the ribbon to the cartridge through its reloading mechanisms for storage, and

e. rotating independently the ink drum, the driven capstan and the cartridge ribbon reloading mechanism so that the cartridge is essentially isolated from the ribbon reinking so that minimum stress is placed on the cartridge ribbon reloading mechanism to prevent damage and breakage to the cartridge and ribbon.

4. An apparatus for reinking used typing ribbons which comprises

a. support means for mounting components in a generally planar arrangement,

b. inking means mounted on said support means for reinking the typing ribbon, said inking means having a rotatably mounted independently driven ink drum the surface of which transfers a film of ink to said ribbon, and



c. a plurality of drive means mounted on said support means for moving the ribbon over the inking means for transferring ink to said ribbon, said plurality of drive means includes

(1) a first drive means drivingly connected to said ink drum for rotating said drum at a constant circumferential velocity, and

(2) a second drive means independent of said first drive means and drivingly connected to and including a ribbon drive capstan, said second drive means being arranged to rotatably drive said capstan at a circumferential velocity which is slightly greater than the circumferential velocity of said ink drum whereby the ribbon is maintained in a taut condition.

4,126,716

PROCESS FOR PREPARING STABLE ANHYDROUS SODIUM DITHIONITE

Kousuke Yamamoto, and Shinji Takenaka, both of Ohmuta, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 15, 1976, Ser. No. 750,814
Claims priority, application Japan, Jan. 6, 1976, 51-68
Int. Cl.[2] C01B *17/66*
U.S. Cl. 427—215 **6 Claims**

1. A process of preparing stable anhydrous sodium dithionite by adding sodium carbonate to anhydrous sodium dithionite, which comprises adding at 15° to 80° C. an aqueous solution of sodium carbonate to a slurry of anhydrous sodium dithionite crystals dispersed in hydrous methanol containing 60 to 80% by weight of methanol which slurry has been obtained by reacting formic acid or sodium formate, sodium hydroxide, and sulfurous acid anhydride in hydrous methanol, the amount of sodium carbonate added being 2 to 5% by weight based on anhydrous sodium dithionite in said slurry, thereby causing sodium carbonate to precipitate in said slurry and adhere uniformly to anhydrous sodium dithionite crystals; and then separating from said slurry anhydrous sodium dithionite crystals having sodium carbonate adhered thereto.

4,126,717

ENCAPSULATED BLEACHES AND METHODS FOR THEIR PREPARATION

Louis R. Mazzola, Mahwah, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 717,718, Aug. 25, 1976, Pat. No. 4,078,099.
This application Oct. 14, 1977, Ser. No. 842,210
Int. Cl.[2] B05D *7/00, 1/02*
U.S. Cl. 427—220 **6 Claims**

1. A method for coating granulated agents, said agents being capable of substantially passing through a U.S. sieve size of about 10 mesh and at least about 80% of said agents being substantially retained on a U.S. sieve size of about 45 mesh comprising:

(a) agitating said agents in a mixer sufficiently to insure thorough contact of a spray coating and continuing said agitation throughout said spray coating; and

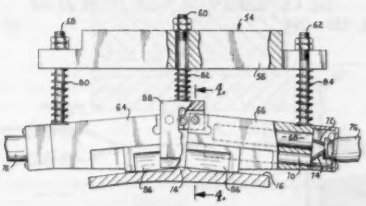
(b) spraying about 35% to about 55% of the total encapsulate weight of a melted solventless coating on said agents to form a coated agent, said spraying being accomplished initially at a rate and internal mixer temperature sufficient to agglomerate any fines present in the agent and after said agglomeration at a rate sufficiently low to prevent substantial further agglomeration of said agents and at an internal mixer temperature within the softening range of said coating, said coating consisting essentially of a major proportion of a fatty acid being substantially nonreactive with said agents and having a melting point range of about 85° F. to about 135° F., a plasticizing amount of a microcrystalline wax having a melting point range of about 125° F. to about 210° F.; and about 5% to about 20% by weight of the total encapsulate weight of a polyoxyethylenepolyoxypropylene copolymer having at least about 65% by weight of polyoxyethylene and having a molecular weight of about 8000 to about 16,500.

4,126,718

APPLYING MASTIC ALONGSIDE WELD BEAD

Howard W. Christie, Kansas City, Mo., and Walter D. Hodge, Shawnee Mission, Kans., assignors to H. C. Price Co.

Filed Mar. 24, 1977, Ser. No. 780,837
Int. Cl.[2] B05D *1/40*
U.S. Cl. 427—286 **3 Claims**



1. In the coating of external pipe surfaces characterized by a raised weld bead extending longitudinally of the surfaces, a method of applying filler material to the surface area which is adjacent the weld bead, said method comprising:

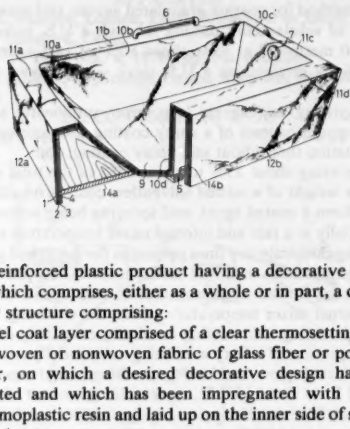
extruding a quantity of the said material onto said area along a line in generally parallel relationship to said weld bead;

effecting relative movement between the extruded material and the pipe;

providing a doctor blade element extending from said raised weld bead to a point on said surface adjacent said area to thereby bridge the area, said element being mounted to pass over irregularities in its path; and

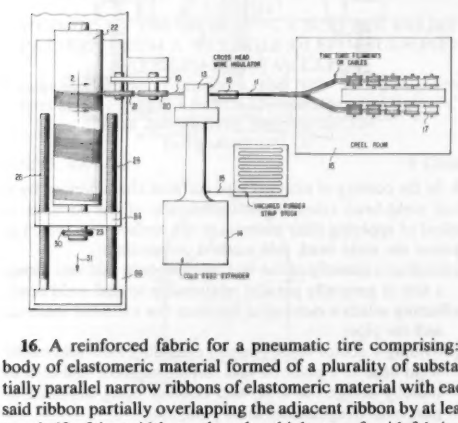
effecting relative movement between said element and said pipe, said step being performed in trailing relationship to said extruding step whereby said material is spread evenly over said area regardless of characteristics of said surface and said weld bead.

4,126,719
REINFORCED PLASTIC PRODUCTS WITH DECORATED SURFACES
Takuji Koyanagi, Nabari, and Nobuhiro Ohno, Ueno, both of Japan, assignors to Ina Seito Co., Ltd., Aichi, Japan
Filed May 3, 1977, Ser. No. 793,353
Int. Cl.[2] B32B *7/00*
U.S. Cl. 428—35 **8 Claims**



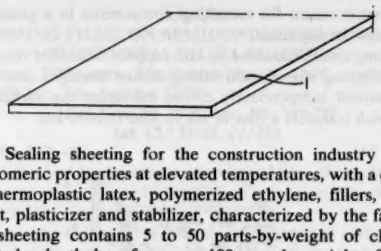
1. A reinforced plastic product having a decorative surface design which comprises, either as a whole or in part, a quadruple-layer structure comprising:
(a) a gel coat layer comprised of a clear thermosetting resin;
(b) a woven or nonwoven fabric of glass fiber or polyester fiber, on which a desired decorative design has been printed and which has been impregnated with a clear thermoplastic resin and laid up on the inner side of said gel coat layer;
(c) a background layer comprised of a thermosetting resin in which an inorganic pigment has been dispersed as laid up on the inner side of said decorated fabric; and
(d) a backup layer comprised of a fiber reinforced plastic material as laid up on the inner side of said background layer.

4,126,720
RADIAL TIRE MANUFACTURING METHOD
George R. Edwards, 5818 Brittany Woods Cir., Louisville, Ky. 40222
Filed May 21, 1976, Ser. No. 688,905
Int. Cl.[2] B29H *9/04, 9/08, 15/00, 15/04*
U.S. Cl. 428—294 **19 Claims**



16. A reinforced fabric for a pneumatic tire comprising: a body of elastomeric material formed of a plurality of substantially parallel narrow ribbons of elastomeric material with each said ribbon partially overlapping the adjacent ribbon by at least one half of its width so that the thickness of said fabric is greater than the thickness of each individual ribbon; and a plurality of spaced substantially parallel individual straight brass plated steel filaments completely embedded in each of said ribbons and extending along the length of same.

4,126,721
SEALING SHEETING
Josef Vitt, Mannheim, Germany, assignor to Brass & Co., GmbH, Frankfurt, Germany
Filed May 16, 1977, Ser. No. 797,263
Claims priority, application Fed. Rep. of Germany, May 17, 1976, 2621825
Int. Cl.[2] D06N *7/00;* **B32B** *5/08, 17/04*
U.S. Cl. 428—339 **11 Claims**

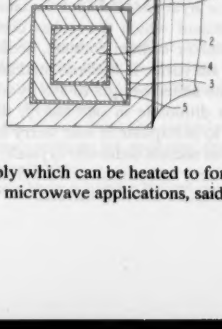


1. Sealing sheeting for the construction industry having elastomeric properties at elevated temperatures, with a content of thermoplastic latex, polymerized ethylene, fillers, release agent, plasticizer and stabilizer, characterized by the fact that the sheeting contains 5 to 50 parts-by-weight of chlorsulfonated polyethylene for every 100 parts-by-weight of a thermoplastic latex.

4,126,722
FUSING SURFACE
Richard J. Murphy, Norwood, Mass., assignor to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 497,411, Aug. 14, 1976, Pat. No. 4,000,339.
This application Oct. 18, 1976, Ser. No. 733,686
Int. Cl.[2] B32B *25/20;* **G03G** *15/20*
U.S. Cl. 428—339 **17 Claims**

1. An article for use in a xerographic reproducing apparatus for fixing a resin-based powder image to a substrate at elevated temperatures, comprising a fuser member having a surface of silicone rubber having substantially no reinforcing filler and being capable of forming a degradation product in the presence of water at elevated temperatures, said silicone rubber having a catalytic agent therein in an amount which in the presence of water or moisture, promotes the degradation of the silicone rubber and the formation of a degradation product on the surface, said degradation product acting as a release material and having an adhesion for the resin-based powder which is less than the adhesion which fused resin-based powder has for the substrate.

4,126,723
PROCESS FOR ASSEMBLING TOROIDS FROM AN INTERMEDIATE PRODUCT HAVING A COMBUSTIBLE INTERLAYER
Robert L. Huntt, Damascus, Md., assignor to Trans-Tech, Inc., Gaithersburg, Md.
Filed Jul. 25, 1977, Ser. No. 818,849
Int. Cl.[2] B32B *1/06, 5/00, 31/26*
U.S. Cl. 428—357 **8 Claims**



1. An assembly which can be heated to form a toroid assembly suitable for microwave applications, said assembly consist-

ing essentially of a ferrite or garnet toroid having an inner surface, a ceramic insert located within said toroid and having an outer surface facing said inner surface, the circumference of said inner surface being greater than the circumference of said outer surface so that an annular area is defined between said toroid and said ceramic insert, a layer of temporary liner material partially filling said area and adhered to said outer surface, said inner surface, or both, and a heat-curable dielectric composition having a dielectric constant of at least about 6 substantially filling the remainder of said area, said liner material burning at a temperature of about 100° F. to a temperature below the curing temperature of said dielectric composition to leave essentially no ash having electro-mechanical properties, the thickness of said liner material being such that upon the liner material being burned, a space is provided for relative expansion and contraction of the toroid, the ceramic insert and the dielectric filler to avoid the placing of undue stress upon said assembly during curing of said dielectric filler so that the B_R value of the cured toroid assembly is within 5% of the B_R value of the original toroid.

4,126,724

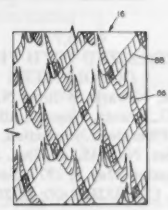
METHOD AND APPARATUS FOR PRODUCING MULTICOLOR PATTERNS AND SHEET MATERIAL PRODUCED THEREBY

Robert E. Randall, Kensington, Conn., assignor to Rowland Products, Incorporated, Berlin, Conn.

Division of Ser. No. 411,302, Oct. 31, 1973, Pat. No. 3,914,362, which is a division of Ser. No. 273,732, Jul. 21, 1972, Pat. No. 3,792,945. This application Apr. 18, 1975, Ser. No. 569,367

Int. Cl.² B32B *3/00*

U.S. Cl. 428—105 **4 Claims**



1. Differentially colored extruded synthetic thermoplastic sheet material comprising a matrix of synthetic thermoplastic resin and a multiplicity of bands of differentially colored thermoplastic resin encapsulated therein, some of said bands extending at a first angular orientation relative to the longitudinal axis of said sheet material and at a first depth within said matrix, and the others of said bands extending at a second angular orientation relative to said longitudinal axis of said sheet material opposite to that of said first angular orientation and at a second depth within said matrix spaced from said first depth so as to visually appear to intersect with those of said first orientation when said bands are viewed through a face of said sheet material, a multiplicity of bands of each orientation being provided across the width of said sheet material, said bands being substantially uniform in area across the width of sheet material and substantially free from smearing.

4,126,725

HIGH PRESSURE LAMINATES

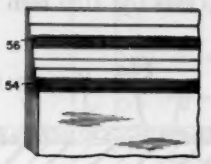
Frank L. Shiflet, Waynesboro, Va., assignor to Hopeman Brothers, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 627,750, Oct. 31, 1975, Pat. No. 4,033,084. This application Apr. 15, 1977, Ser. No. 787,838

Int. Cl.² B32B *5/12*

U.S. Cl. 428—110 **21 Claims**

1. In a high pressure decorative laminate comprising a plurality of layers and adhesive means rigidly securing said layers together to provide a self-sustaining laminate, said layers including a plurality of phenolic layers, and a synthetic resin-containing layer having a tendency to shrink under conditions of low humidity thereby tending to cause deformation of the laminate, the improvement comprising the fact that said plurality of layers includes two steel foil layers, each layer being at



least approximately 0.002 inch in thickness, both steel foil layers being located on the same side of said synthetic resin-containing layer but being separated from each other by at least one of said phenolic layers.

4,126,726

DISC-SHAPED INFORMATION CARRIER HAVING INFORMATION IN THE FORM OF A BEAM-REFLECTING STRUCTURE AND A PROCESS FOR PRODUCING THE SAME

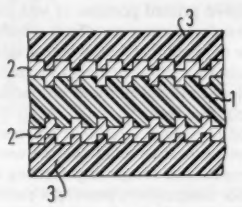
Horst Soeding, Hanover, Germany, assignor to Polygram GmbH, Hamburg, Germany

Filed Apr. 4, 1977, Ser. No. 784,522

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1976, 2615605

Int. Cl.² G11B *7/00, 5/82;* **B32B** *15/08, 15/20*

U.S. Cl. 428—163 **12 Claims**



1. An information carrier for high-density storage, comprising:

a base element including a pair of surfaces each having a surface profile structure corresponding to the stored information;

a pair of metallic beam reflecting layers each carried on a respective one of said surfaces and having the respective surface profile on the outer metal surfaces; and

a pair of transparent layers each carried on a respective one of said metallic layers

8. A process for producing an information carrier comprising the steps of:

forming a surface structure on each side of a base element corresponding to information to be stored;

applying a metallic coating on each of the sides while maintaining

the same surface structure on the outer metal surfaces; and

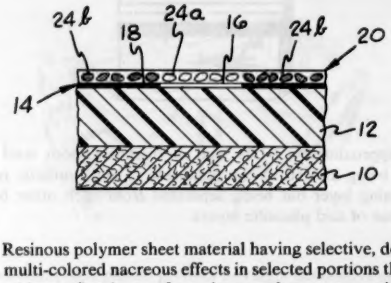
applying a transparent coating over each of the metallic coatings.

4,126,727

RESINOUS POLYMER SHEET MATERIALS HAVING SELECTIVE, DECORATIVE EFFECTS

Stanley J. Kaminski, Trenton, N.J., assignor to Congoleum Corporation, Kearny, N.J.

Filed Jun. 16, 1976, Ser. No. 696,594
Int. Cl.[2] B32B *3/30, 31/22;* B05D *7/00*
U.S. Cl. 428—172 26 Claims



1. Resinous polymer sheet material having selective, decorative, multi-colored nacreous effects in selected portions thereof comprising: a first layer of a resinous polymer composition; a pattern or design printed on the surface of said first layer of resinous polymer composition and having relatively dark colored printed portions and relatively light colored printed portions; a second layer of a resinous polymer composition applied over and adhered to said printed pattern or design, said second layer of resinous polymer composition having a refractive index of from about 1.3 to about 1.7; and translucent or transparent decorative chips or flakes substantially uniformly dispersed throughout said second layer of resinous polymer composition, said translucent or transparent decorative chips or flakes comprising translucent or transparent platelets having a refractive index of from about 1.3 to about 1.7 and provided with a translucent or transparent coating having a refractive index of at least about 1.8 and a thickness of from about 0.05 micron to about 2 microns, whereby destructive interference or other optical effects are created such that said translucent or transparent decorative chips or flakes located over said relatively dark colored printed portions of said pattern or design are given multi-colored nacreous effects which are discernible from a distance of about five feet, whereas said translucent or transparent decorative chips or flakes located over said relatively light colored printed portions are indiscernible from a distance of about five feet.

21. A method of making a resinous polymer sheet material having selective decorative multi-colored nacreous effects in selected portions thereof comprising: forming a first layer of a resinous polymer composition; printing a pattern or design on the surface of said first layer of resinous polymer composition having relatively dark colored printed portions and relatively light colored printed portions; forming a second layer of a resinous polymer composition having a refractive index of from about 1.3 to about 1.7 and having substantially uniformly dispersed therein translucent or transparent decorative chips or flakes comprising translucent or transparent platelets having a refractive index of from about 1.3 to about 1.7 and a translucent or transparent coating thereon having a refractive index of at least about 1.8 and a thickness of from about 0.05 micron to about 2 microns; and applying said second layer of resinous polymer composition adheringly over said printed pattern or design, whereby destructive interference or other optical effects are created such that said translucent or transparent chips or flakes located over said relatively dark colored printed portions of said pattern or design are given multi-colored nacreous effects which are discernible from a distance of about five feet, whereas said translucent or transparent chips or flakes located over said relatively light colored printed portions of said printed pattern or design are indiscernible form a distance of about five feet.

4,126,728

CERAMIC DECALCOMANIA

Louis M. Holleran, Elmira, and Sylvester R. Sandor, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 12, 1977, Ser. No. 823,987
Int. Cl.[2] B41M *3/12*
U.S. Cl. 428—204 9 Claims

1. An overglaze ceramic color decalcomania comprising:
(a) a design layer including at least one ceramic pigment;
(b) a first transparent protective layer disposed on the design layer composed of a powdered low-melting-point glass without color pigment;
(c) a second transparent protective layer disposed on the first protective layer composed of a powdered glass without color pigment which (i) differs in composition from the glass of the first protective layer, (ii) has a softening point below that of the glass of the first protective layer; (iii) exhibits good detergent durability; said second protective layer acting to seal off interactions between said pigment and said first protective layer during firing and
(d) a backing upon which are disposed the design layer, the first protective layer and the second protective layer.

4,126,729

GLASS FIBERS SIZED WITH VINYL ACETATE COPOLYMERS

Tom A. Richardson, Newark; William N. Haggerty, Reynoldsburg, and Fred G. Krautz, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 645,741, Dec. 31, 1975, abandoned. This application May 5, 1977, Ser. No. 793,971
Int. Cl.[2] B32B *9/00;* D02G *3/00*
U.S. Cl. 428—389 11 Claims

7. Glass fibers coated with the dried residue of an aqueous mixture consisting essentially of an epoxidized polyvinyl acetate copolymer, an ethylene vinyl acetate copolymer, a vinyl acetate ethyl acrylate copolymer, a silane coupling agent, a methacrylate chromic chloride and a polyethyleneimine condensate.

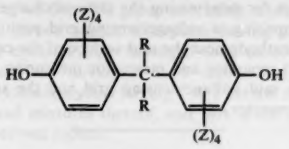
4,126,730

LAMINATES

Richard Edgar Molari, Jr., Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 586,630, Jun. 13, 1975, Pat. No. 4,027,072, which is a continuation-in-part of Ser. No. 369,663, Jun. 13, 1973, abandoned. This application Jan. 24, 1977, Ser. No. 761,877
Int. Cl.[2] B32B *9/00, 17/06, 27/36*
U.S. Cl. 428—412 8 Claims

1. A laminate of glass and other material selected from the group comprising solid resinous material, glass, wood, ceramics, metals and cermets and having as adhesive interlayer block polysiloxane-polycarbonate copolymer prepared by reacting (A) a halogen chain-stopped polydiorganosiloxane composed of from about 5 to 200 chemically combined diorganosiloxy units consisting essentially of dialkylsiloxy units which are connected to each other by silicon-oxygen-silicon linkages wherein each of the silicon atoms has two organo radicals attached through a carbon-silicon bond, and (B) a dihydric phenol having the formula



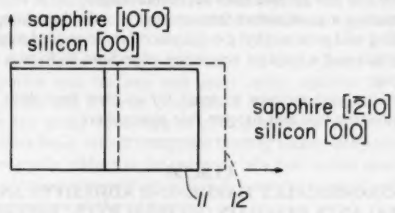
where Z is a member selected from the class consisting of hydrogen, lower alkyl radicals and halogen radicals and combinations thereof, and R is a member selected from the class consisting of hydrogen, hydrocarbon and halogenated hydrocarbon radicals, and phosgenating the purified reaction product until the resulting copolymer achieves a maximum intrinsic viscosity.

4,126,731

SAPPHIRE SINGLE CRYSTAL SUBSTRATE FOR SEMICONDUCTOR DEVICES

Jun-ichi Nishizawa, and Mitsuhiro Kimura, both of Sendai, Japan, assignors to Semiconductor Research Foundation and Tohoku Metal Industries Limited, both of Sendai, Japan

Filed Oct. 24, 1975, Ser. No. 625,527
Claims priority, application Japan, Oct. 26, 1974, 49-123616
Int. Cl.[2] C04B *35/46*
U.S. Cl. 428—446 **15 Claims**



1. A sapphire-containing rhombohedral single crystal substrate for epitaxial growth thereon of a layer of a semiconductor, said single crystal substrate being an electrically insulating material consisting essentially of Ti_2O_3 in an amount between 40 and 65 mol % with the balance being essentially Al_2O_3, whereby the lattice misfit coefficient between said substrate and an epitaxially grown semiconductor thereon is not more than about 1% along the [10$\bar{1}$1] axis.

4,126,732

SURFACE PASSIVATION OF IV-VI SEMICONDUCTORS WITH As_2S_3

Richard B. Schoolar, Silver Spring, and James D. Jensen, Highland, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 16, 1977, Ser. No. 825,007
Int. Cl.[2] H01L *21/208;* **B05D** *5/12;* **H01L** *21/368*
U.S. Cl. 428—539 **52 Claims**

1. A process for preparing a semiconductor device of a lead chalcogenide, comprising:

evaporating in a vacuum a film of a lead chalcogenide on a substrate; and,

then coating in the vacuum the element so produced with arsenic trisulfide.

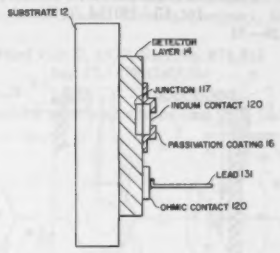
17. A semiconductor device, comprising:

a lead chalcogenide member having a first type conductivity;

the member having at least one major surface;

a region of second and opposite type conductivity disposed into the member;

the region having an end surface coplanar with one major surface; and



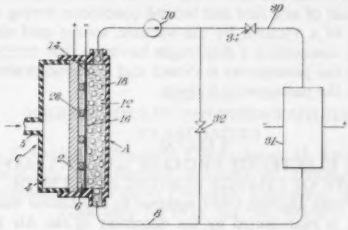
a layer of arsenic trisulfide disposed on the major surface about the end surface.

4,126,733

ELECTROCHEMICAL GENERATOR COMPRISING AN ELECTRODE IN THE FORM OF A SUSPENSION

Denis Doniat, Paris, France, assignor to Sorapec Societe de Recherches et d'Application Electronchimiques, Paris, France

Continuation of Ser. No. 685,069, May 10, 1976, abandoned.
This application Aug. 22, 1977, Ser. No. 826,700
Int. Cl.[2] H01M *8/08*
U.S. Cl. 429—12 **22 Claims**

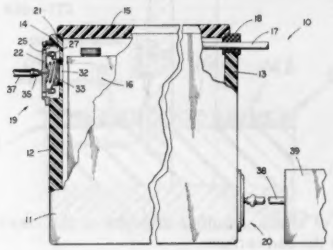


1. In an electro-chemical generator which comprises at least one cathodic compartment, and at least one anodic compartment, a cathode and an anode within said cathodic and anodic compartments respectively, wherein one at least of said electrodes comprises particles suspended within a liquid electrolyte, said particles comprising an active material consumable by an electrochemical reaction upon contact of said particles with a collector of electrical current, means for causing circulation of said suspension of particles with electrolyte within the corresponding compartment in contact with said collector of electrical current, the improvement wherein the generator is free of an electro-chemical separator and contains a free space filled with electrolyte between said current collector and the electrode in the compartment opposite that in which the electrode suspension of particles is circulated, said particles comprise cores of a chemically and electro-chemically inert material having thereon an external coating of said active material, the collector is positioned between the said cathodic and anodic compartments, and is provided with holes having sizes sufficiently large to allow the free passage of the electrolyte from any one of said cathodic and anodic compartments to the other but smaller than the sizes of the inert cores.

4,126,734
BATTERY INSULATOR APPARATUS

Gary Walters, 134 Worman Ave., Southport, Ind. 46227

Filed Jul. 15, 1977, Ser. No. 816,021
Int. Cl.[2] H01M *10/50*
U.S. Cl. 429—71 7 Claims



1. An apparatus for maintaining a battery at a temperature above ambient temperature by retaining heat generated by the battery which comprises:

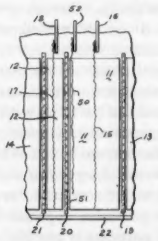
a container within which a battery is received, the container defining an interior space surrounding the battery, said container further defining a passageway communicating with the interior space and with the exterior of said container; and

a closure device mounted to said container and associated with the passageway, said closure device having a first condition in which the passageway is closed by said closure device and a second condition in which the passageway is open, said closure device being connectable to a vacuum source and being operable by the vacuum source to change between the first and second conditions, said closure device normally being in one of said first and second conditions and being moved to and maintained in the other of said first and second conditions during application of a vacuum by the vacuum source said closure device comprising a diaphragm having a first position in which the passageway is closed and a second position in which the passageway is open.

4,126,735
POROUS ELECTRODE PRIMARY BATTERY HAVING STATE OF CHARGE SENSING ELECTRODE

David H. Fritts, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 21, 1977, Ser. No. 844,162
Int. Cl.[2] H01M *10/48*
U.S. Cl. 429—91 3 Claims



1. The improvement in a porous electrode primary battery comprising a cell having a porous carbon cathode with a surface and an electrical connector, an anode with a surface, a separator separating the said cathode and anode positioned adjacent and between the said cathode surface and the said anode surface, the said improvement to provide, while underload, a means for determining the state of charge of the said battery, comprising: a voltage sensing grid positioned in the said porous cathode near the said surface of the cathode adjacent the said separator and means for measuring the voltage between the said voltage sensing grid and the said cathode electrical connector.

4,126,736
ANIONICALLY POLYMERIZED COPOLYMERS OF METHYL α-N-ALKYLACRYLATE AND METHYL METHACRYLATE AND METHOD OF MAKING SAME

Henry Gisser, Philadelphia, and Helen Mertwoy, Dresher, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 761,141, Jan. 19, 1977, Pat. No. 4,098,988.
This application Apr. 3, 1978, Ser. No. 892,600
Int. Cl.[2] C08F *4/46*
U.S. Cl. 526—173 5 Claims

1. A method for the anionic copolymerization of methyl methacrylate and methyl α-n-alkylacrylate having the formula

$$R-\underset{\displaystyle COOCH_3}{\overset{\displaystyle |}{C}}=CH_2\,,$$

where R is an alkyl having the formula C_nH_{2n+1} where n is at least 10 and not greater than 22, comprising:

preparing a pure isomer free, methyl α-n-alkylacrylate;

adding said pure methyl α-n-alkylacrylate to methyl methacrylate and a catalyst consisting of sodium to form a mixture;

allowing said mixture to react for at least four days in a moisture free and oxygen free atmosphere.

4,126,737
ANAEORBICALLY HARDENING ADHESIVES AND SEALANTS BASED ON (METH)ACRYLIC ESTERS CONTAINING REACTION PRODUCTS OF GLYCIDYL-(METH)ACRYLATE AND HALF ESTERS CONTAINING CARBONATE GROUPS

Werner Gruber, Düsseldorf-Gerresheim; Joachim Galinke, Langenfeld, and Bernd Wegemund, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Düsseldorf, Fed. Rep. of Germany

Filed Feb. 22, 1977, Ser. No. 770,448
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1976, 2607961
Int. Cl.[2] C08F *2/00, 4/32, 234/02, 18/24*
U.S. Cl. 526—270 20 Claims

1. An anaerobically setting adhesive and sealing composition comprising

(a) 10 to 40% by weight, based on the total weight of the polymerizable portions of the composition, of methacrylic or acrylic acid esters,

(b) 0.1 to 20% by weight, based on the total weight of the polymerizable portions of the composition, of organic hydroperoxides, and

(c) 10 to 90% by weight, based on the total weight of the polymerizable portions of the composition, of a di(meth)acrylic ester containing carbonate groups of the general formula

$$MA-CH_2-\underset{\displaystyle OH}{\overset{\displaystyle |}{CH}}-CH_2-O-\overset{\displaystyle O}{\overset{\displaystyle \|}{C}}-R'-\overset{\displaystyle O}{\overset{\displaystyle \|}{C}}-O-R-O-\overset{\displaystyle O}{\overset{\displaystyle \|}{C}}-O-$$
$$-R-O-\overset{\displaystyle O}{\overset{\displaystyle \|}{C}}-R'-\overset{\displaystyle O}{\overset{\displaystyle \|}{C}}-O-CH_2-\underset{\displaystyle OH}{\overset{\displaystyle |}{CH}}-CH_2-MA$$

wherein R is a saturated or unsaturated aliphatic hydro-

carbon radical with 2 to 8 carbon atoms and R' is a member selected from the group consisting of alkylene having 2 to 6 carbon atoms, alkenylene having 2 to 6 carbon atoms, cycloalkylene having 5 to 8 carbon atoms, cycloalkenylene having 5 to 8 carbon atoms, endoalkylenecycloalkenylene having 7 to 8 carbon atoms, phenylene, and mixtures thereof, and MA is the (meth)acrylic acid derived radical.

4,126,738

COPOLYMERS OF 5-NORBORNENE 2,3-DICARBOXYLIC ANHYDRIDE AND MALEIC ANHYDRIDE

Norman G. Gaylord, New Providence, N.J., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 658,436, Feb. 17, 1976, abandoned. This application Apr. 4, 1977, Ser. No. 783,997

Int. Cl.[2] C08F *220/08, 234/00*

U.S. Cl. 526—271 **11 Claims**

1. A terpolymer of maleic anhydride and the exo and endo cyclic adducts of maleic anhydride and a cyclic conjugated diene, said diene selected from the group consisting of cyclopentadiene and methylcyclopentadiene, said terpolymer prepared by heating maleic anhydride and one of said cyclic adducts in the presence of a free radical precursor at a reaction temperature which is a temperature of endo-exo isomerization of the adduct.

2. A process for the preparation of terpolymers of maleic anhydride and the exo and endo cyclic adducts of maleic anhydride and a cyclic conjugated diene, said diene selected from the group consisting of cyclopentadiene and methylcyclopentadiene, which comprises heating maleic anhydride and either cyclic adduct in the presence of a free radical precursor, at a reaction temperature which is a temperature of endo-exo isomerization of the adduct.

4,126,739

COPOLYMERS, HAVING A UNIFORM STRUCTURE, OF CYCLIC DIENES AND THEIR USE

Richard Hoene, Heidelberg; Heinz-Hilmar Bankowsky, Ludwigshafen; Eduard Hartmann, Limburgerhof; Hans-Uwe Schenck, Wachenheim, and Paul Boerzel, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,049

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1976, 2655109

Int. Cl.[2] C08F *222/00, 222/08*

U.S. Cl. 526—272 **9 Claims**

1. Copolymers, having a uniform structure, of cyclic dienes, which copolymers have been obtained by heating a mixture of

(A) from 35 to 96% by weight of one or more compounds selected from the group comprising cyclopentadiene, dicyclopentadiene, methyldicyclopentadiene, methylcyclopentadiene, tricyclopentadiene and methyltricyclopentadiene,

(B) from 1 to 30% by weight of maleic anhydride, maleic acid or a monoalkyl maleate and

(C) from 3 to 45% by weight of one or more vinyl-aromatics, the sum of the percentages of (A), (B) and (C) amounting to 100, to 230°-320° C., in the course of which heating the mixture does not remain for more than 5 hours at from 30° to 230° C.

4,126,740

ORGANOPOLYSILOXANE-POLYCARBONATE COPOLYMERS

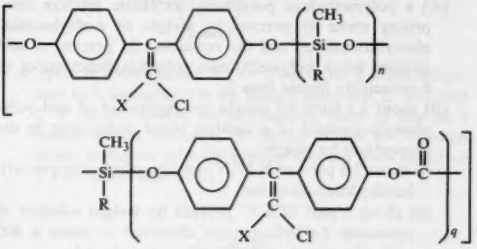
Arnold Factor, Scotia, N.Y., and Keith N. Sannes, Mt. Vernon, Ind., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 2, 1978, Ser. No. 874,512

Int. Cl.[2] C08G *77/04*

U.S. Cl. 528—29 **6 Claims**

1. A composition of matter comprising units of the general formula



where X is a member selected from the class consisting of chlorine and hydrogen, R is a member selected from the class consisting of lower alkyl radicals of from 1 to 3 carbon atoms and the phenyl radical, and n and q independently are whole numbers equal to at least 1.

4,126,741

HIGH-MODULUS POLYISOCYANURATE ELASTOMERS

Peter S. Carleton, Branford, Conn.; James H. Ewen, Jr., Seabrook, Tex., and Harold E. Reymore, Jr., Wallingford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed May 15, 1978, Ser. No. 905,654

Int. Cl.[2] C08G *18/22, 18/76, 18/32*

U.S. Cl. 528—57 **7 Claims**

7. A solid polymer in which the major recurring polymer unit is isocyanurate which polymer comprises the reaction product obtained by bringing together:

(A) a polymethylene polyphenylisocyanate mixture comprising about 65 percent by weight of methylenebis(-phenylisocyanate) and the remaining 35 percent of said mixture being polymethylene polyphenylisocyanates of functionality higher than 2;

(B) about 1 part by weight per equivalent of said polyphenylisocyanate of a catalyst blend comprising, in the proportions by weight:

(i) about 3.6 parts of N,N',N''-tris(dimethylaminopropyl)-hexahydrotriazine, and

(ii) about 1 part of a 67 percent by weight solution of potassium 2-ethylhexanoate dissolved in about a 400 molecular weight polypropylene glycol; and

(C) a polyol combination comprising:

(1) about 0.1 equivalent, per equivalent of said polyphenylisocyanate, of a polypropyleneoxy triol having an equivalent weight of about 850; and

(2) about 0.1 equivalent, per equivalent of said polyphenylisocyanate, of ethylene glycol.

4,126,742
HIGH-MODULUS POLYISOCYANURATE ELASTOMERS

Peter S. Carleton, Branford, Conn.; James H. Ewen, Jr., Seabrook, Tex., and Harold E. Reymore, Jr., Wallingford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed May 15, 1978, Ser. No. 905,653
Int. Cl.[2] C08G *18/22, 18/76, 18/32*
U.S. Cl. 528—57 **12 Claims**

10. A solid polymer in which the major recurring polymer unit is isocyanurate which polymer comprises the reaction product obtained by bringing together:

(A) a polymethylene polyphenylisocyanate mixture comprising about 65 percent by weight of methylenebis(-phenylisocyanate) and the remaining 35 percent of said mixture being polymethylene polyphenylisocyanates of functionality higher than 2;

(B) about 1.1 parts by weight per equivalent of said polyphenylisocyanate of a catalyst blend comprising in the proportions by weight:

(i) about 3.6 parts of N,N',N''-tris(dimethylaminopropyl)-hexahydrotriazine, and

(ii) about 1 part of a 67 percent by weight solution of potassium 2-ethylhexanoate dissolved in about a 400 molecular weight polypropylene glycol; and

(C) a polyol combination comprising:

(1) about 0.05 equivalent, per equivalent of said polyphenylisocyanate, of an ethylene oxide capped polypropyleneoxy glycol having an equivalent weight of about 1000; and

(2) about 0.10 equivalent, per equivalent of said polyphenylisocyanate, of a diol selected from the group consisting of 1,4-butanediol and diethylene glycol.

4,126,743
METHOD FOR CONTINUOUS TRANSFER OF POLYMER SLURRIES

Tetsunosuke Shiomura, Takaishi; Tatuo Ooka, Izumi, and Hideo Sadatomo, Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Mar. 31, 1978, Ser. No. 892,022
Int. Cl.[2] C08F *6/00, 6/24*
U.S. Cl. 528—503 **14 Claims**

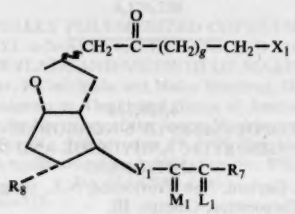
1. In the method for the transfer of a polymer slurry composed of solid polymer particles and at least one diluent selected from the group consisting of inert hydrocarbons and inert halogenated hydrocarbons including providing said polymer slurry in a slurry vessel kept at a super-atmospheric pressure sufficient to maintain said diluent in the liquid state, passing said polymer slurry sequentially through a first elongated and jacketed heating zone of relatively small diameter and a second elongated and jacketed heating zone having a diameter larger than that of said first heating zone, said first and second heating zones being both heated with heating means selected from the group consisting of vapor of a heating medium and steam so as to vaporize said diluent for conveyance of the solid dried polymer particles, and introducing the mixture of said vaporized diluent and said solid dried polymer particles into a separation zone to separate said solid polymer particles from the diluent vapor, the improvement which comprises introducing said polymer slurry continuously from said slurry vessel into said first heating zone and controlling the flow rate of said polymer slurry passing through said first heating zone by regulating the amount of heat supplied to said first heating zone through said heating means.

4,126,744
4-OXO-PGI$_1$ COMPOUNDS

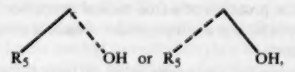
Donald E. Ayer, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 5, 1977, Ser. No. 857,106
Int. Cl.[2] C07D *307/93*
U.S. Cl. 542—426 **43 Claims**

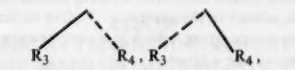
1. A prostacyclin analog of the formula



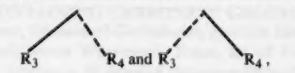
wherein g is the integer one, 2, or 3;
wherein R_8 is hydrogen, hydroxy, or hydroxymethyl;
wherein Y_1 is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) $—CH_2CH_2—$, or
(4) —C≡C—,
wherein M_1 is



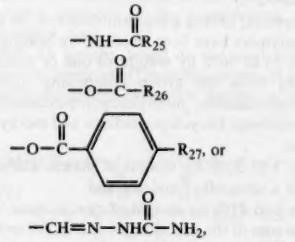
wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive,
wherein L_1 is



or a mixture of



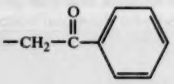
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein X_1 is
(1) $—COOR_1$ wherein R_1 is hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive, hydrocarbylaralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms; phenyl substituted in the para position by



(a)
(b)
(c)
(d)

wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or $—NH_2$; R_{26} is methyl, phenyl, $—NH_2$,

or methoxy; and R_{27} is hydrogen or acetamido; inclusive, phenacyl, i.e.,



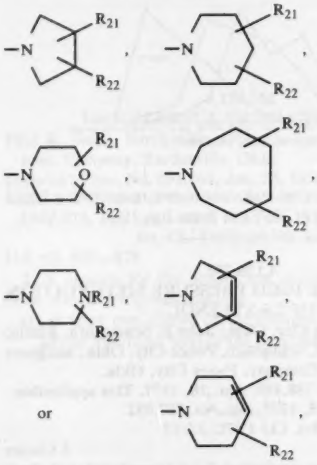
phenacyl substituted in the para position by chloro, bromo, phenyl, or benzamido; or a pharmacologically acceptable cation;

(2) $-CH_2OH$; or

(3) $-COL_4$, wherein L_4 is

(a) amino of the formula $-NR_{21}R_{22}$; wherein R_{21} and R_{22} are hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro; carboxyalkyl of one to 4 carbon atoms, inclusive; carbamoylalkyl of one to 4 carbon atoms, inclusive; cyanoalkyl of one to 4 carbon atoms, inclusive; acetylalkyl of one to 4 carbon atoms, inclusive; benzoylalkyl of one to 4 carbon atoms, inclusive; benzoylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro; pyridyl; pyridyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive; pyridylalkyl of one to 4 carbon atoms, inclusive; pyridylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, or alkoxy of one to 3 carbon atoms, inclusive; hydroxyalkyl of one to 4 carbon atoms, inclusive; dihydroxyalkyl of one to 4 carbon atoms; and trihydroxyalkyl of one to 4 carbon atoms; with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;

(b) cycloamino selected from the group consisting of



or

wherein R_{21} and R_{22} are as defined above;

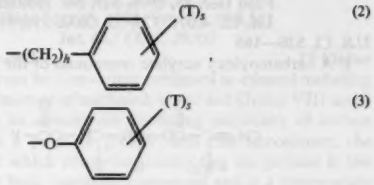
(c) carbonylamino of the formula $-NR_{23}COR_{21}$, Wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is as defined above;

(d) sulfonylamino of the formula $-NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined above; or

(e) hydrazino of the formula $-NR_{23}R_{24}$, wherein R_{23} is as defined above and R_{24} is amino of the formula $-NR_{21}R_{22}$, as defined above, or cycloamino, as defined above; and

wherein R_7 is

(1) $-(CH_2)_m-CH_3$,



(2)

(3)

wherein m is the integer one to 5, inclusive, h is the integer zero to 3, inclusive; s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl.

4,126,745

7-METHOXYCEPHALOSPORIN DERIVATIVES

Hideo Nakao; Hiroaki Yanagisawa; Bunji Shimizu; Masakatsu Kaneko; Mitsuo Nagano, and Shinichi Sugawara, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

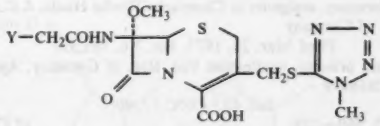
Filed Apr. 13, 1976, Ser. No. 676,488

Claims priority, application Japan, Apr. 30, 1975, 50-52180; May 7, 1975, 50-55026

Int. Cl.[2] C07D *501/50, 501/36;* **A61K** *31/545*

U.S. Cl. 544—21 **3 Claims**

1. A 7-methoxycephalosporin having the formula



wherein Y is a 2-carboxyethylthio group and a nontoxic pharmaceutically acceptable salt thereof.

4,126,746

HALOHYDRIN THIOETHERS AND METHOD OF PREPARATION

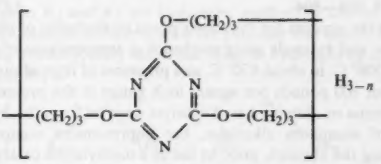
Richard A. Hickner, and Corwin J. Bredeweg, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 764,956, Oct. 3, 1968, abandoned. This application Aug. 9, 1971, Ser. No. 170,297

Int. Cl.[2] C07D *251/30*

U.S. Cl. 544—219 **2 Claims**

1. A compound of the formula $R(SCH_2CH(OH)CH_2X)_n$ in which X is chlorine or bromine, R is the residue of a triallyl cyanurate of the formula



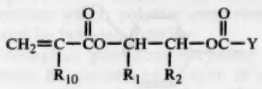
and n is 1 to 3.

4,126,747
CARBAMOYLOXY ACRYLATE COMPOUNDS

Frank G. Cowherd, III, and Louis F. Theiling, Jr., both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 28, 1976, Ser. No. 755,063
Int. Cl.[2] C07C *125/06*; C07D *295/16*
U.S. Cl. 520—166 **3 Claims**

1. A carbamoyloxy acrylate compound of the formula



wherein R_1 and R_2 are each hydrogen or alkyl of up to 10 carbon atoms; R_{10} is hydrogen or methyl; and Y is a group of the formula

wherein R_{11} is alkyl of up to 10 carbon atoms or cycloalkyl of up to 10 carbon atoms and R_{12} is alkyl of up to 10 carbon atoms, cycloalkyl of up to 10 carbon atoms, or aralkyl having up to 10 carbon atoms in the alkyl segment.

4,126,748
PROCESS FOR THE PRODUCTION OF CARBOXYLIC ACID ESTERS BY CATALYTIC OXIDATION OF ALCOHOLS

Bernhard Scholz; Fritz Obenaus; Gerhard Franz; Hans-Jürgen Erberich, and Heinz-Otto Reitemeyer, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, A.G., Fed. Rep. of Germany

Filed Mar. 25, 1977, Ser. No. 781,391
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1976, 2616979
Int. Cl.[2] C07C *67/40*
U.S. Cl. 560—239 **10 Claims**

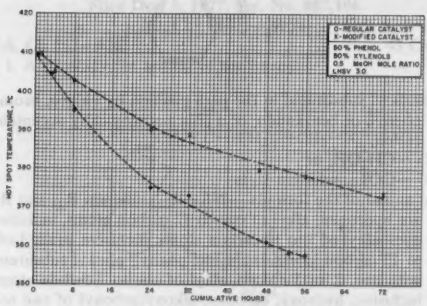
1. In a process for the liquid phase catalyzed oxidation of a primary lower aliphatic alcohol to a carboxylic acid ester with molecular oxygen at elevated temperatures and in the presence of an oxidation catalyst, the improvement which comprises employing methanol as the alcohol and employing as the oxidation catalyst a solution in the methanol of (a) a compound of Co, Mn, Cr or Fe and (b) an acid having a first dissociation constant K_1 greater than 10^{-3}, in an amount of at least about 5 p.p.m. by weight based on the methanol.

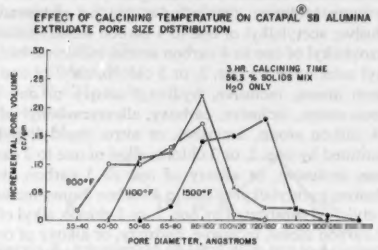
4,126,749
PHENOLICS METHYLATION USING A MODIFIED ALUMINA CATALYST

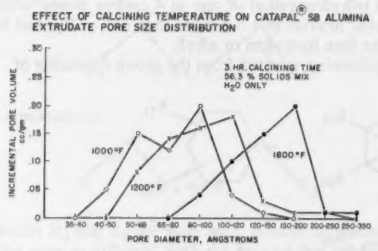
Bruce E. Leach, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Jul. 20, 1977, Ser. No. 817,414
Int. Cl.[2] C07C *37/12*
U.S. Cl. 568—804 **2 Claims**

1. In the process for the vapor phase methylation of phenol, cresols, and xylenols using methanol at temperatures of from about 300° C. to about 450° C. and pressures of from about 0.01 to about 100 pounds per square inch gauge in the presence of an alumina or alumina-based catalyst derived from the hydrolysis of aluminum alkoxides, the improvement comprising calcining the alumina, prior to use as a methylation catalyst, at temperatures of from about 1150° F. to about 1800° F. for from about 0.5 to about 12 hours to produce an alumina having at least 50% of the pores larger than about 65 angstroms and at least 50% of the pores smaller than about 200 angstroms, then







carrying out the reaction in a continuous reactor at a liquid hourly space velocity (LHSV) of from 2 to 10.

4,126,750
PROCESS FOR THE HIGH PRESSURE METHYLATION OF 2,6-XYLENOL

Ronald L. Poe, Ponca City, Okla.; John F. Scamehorn, Austin, Tex., and Cortlan R. Schupbach, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

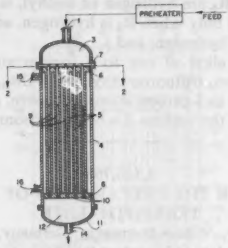
Division of Ser. No. 788,198, Apr. 18, 1977. This application Dec. 5, 1977, Ser. No. 857,052
Int. Cl.[2] C07C *37/12*
U.S. Cl. 568—804 **3 Claims**

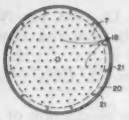
1. In a method for producing 2,3,6-trimethylphenol from 2,6-xylenol by contacting said xylenol with methanol in the presence of alumina catalysts at temperatures of from about 300° to about 390° C and pressures of from about 350 to about 1500 pounds per square inch gauge in a reactor having a plurality of reactor tubes the improvement comprising optimizing the mole ratio of reactants in each reactor tube by

(a) preheating the liquid 2,6-xylenol/methanol feed mixture in substantial absence of alumina while maintaining suffi-

cient pressure to maintain the feed mixture in the liquid state,

(b) injecting and expanding said feed mixture into reactor tubes containing sufficient alumina to catalyze said reaction, said injection into each tube being made through at least one orifice of sufficient size to cause sufficient pressure drop on the downstream side of the orifice to partially vaporize said feed mixture to reach reaction conditions before contacting said catalyst,





(c) said preheating being carried out to a temperature sufficient to maintain reaction temperatures and pressures after expansion.

4,126,751

ALKENOL PRODUCTION

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

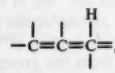
Division of Ser. No. 651,864, Jan. 23, 1976, Pat. No. 4,039,594, which is a division of Ser. No. 484,261, Jun. 28, 1974, Pat. No. 3,960,973. This application Mar. 29, 1977, Ser. No. 782,604

Int. Cl.[2] C07C *29/00, 35/05*

U.S. Cl. 568—879 **6 Claims**

1. A process for the production of alkenols and cycloalkenols which comprises reacting:

(a) at least one alkene or cycloalkene having at least one allylic hydrogen having the basic structure



and having from 3 to 20 carbon atoms per molecule with

(b) formmaldehyde in the presence of

(c) a catalyst selected from the group consisting of the oxides of Group VIB metals and optionally a support selected from the group consisting of silica, pumice, charcoal, and kieselguhr under reaction conditions including an elevated temperature and pressure sufficient to produce alkenols and cycloalkenols.

4,126,752

HOMOLOGATION OF METHANOL WITH A CARBON MONOXIDE-WATER MIXTURE

Miroslav Novotny, Denville, and Lowell R. Anderson, Morristown, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Mar. 6, 1978, Ser. No. 883,541

Int. Cl.[2] C07C *29/00*

U.S. Cl. 568—902 **13 Claims**

1. In a process for converting methanol to ethanol including contacting a mixture of methanol, water and Group VIII metal catalyst with an atmosphere consisting essentially of carbon monoxide, at a pressure greater than one atmosphere, the improvement which comprises conducting the process in the presence of a basic inorganic compound and at a temperature below the critical temperature of water, said water being substantially in the liquid state.

4,126,753

CIS-4,5-DIDEHYDRO-13,14-DIDEHYDRO-11-DEOXY-PGF$_{1\alpha}$ COMPOUNDS

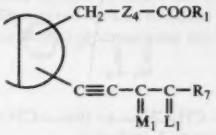
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,740, Feb. 13, 1976. This application Aug. 1, 1977, Ser. No. 820,973

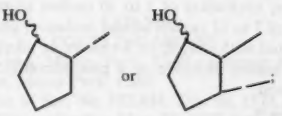
Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—121 **73 Claims**

1. A prostaglandin analog of the formula



wherein D is



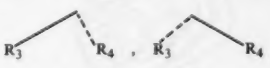
wherein Z_4 is

cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—, wherein g is 1, 2, or 3;

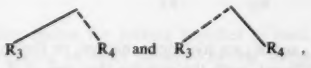
wherein R_7 is

—$(CH_2)_m$—CH_3, wherein m is 1 to 5, inclusive;

wherein L_1 is

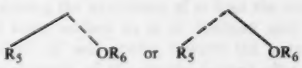


or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the provisio that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;

wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso

that one of R_5 and R_6 is methyl only when the other is hydrogen; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,126,754

11-DEOXY-CIS-4,5-DIDEHYDRO-ω-ARYL-PGE COMPOUNDS

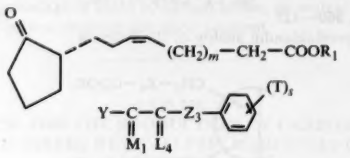
Gordon L. Bundy, Portage, and Norman A. Nelson, Galesburg, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 609,410, Sep. 2, 1975. This application Apr. 17, 1978, Ser. No. 897,225

Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



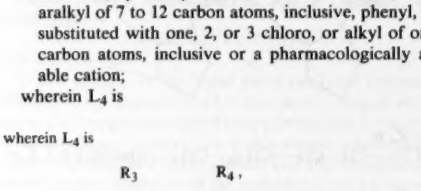
wherein Y is $-CH_2CH_2-$ or trans$-CH=CH-$;

wherein *m* is one to 3, inclusive;

wherein Z_3 is oxa or methylene;

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive. aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro, or alkyl of one to 3 carbon atoms, inclusive or a pharmacologically acceptable cation;

wherein L_4 is



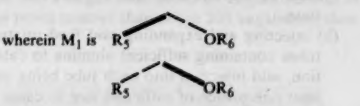
wherein L_4 is

or a mixture of

and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro and Z_3 is methylene;

wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that R_5 is methyl only when R_6 is hydrogen, and R_6 is methyl only when R_5 is hydrogen; and

wherein T is alkyl of one to 3 carbon atoms, inclusive, chloro, fluoro, trifluoromethyl, or $—OR_8$, wherein R_8 is alkyl of one to 3 carbon atoms, inclusive, and *s* is zero to 3, inclusive, the various T's being the same or different.

4,126,755

PROCESS FOR THE PREPARATION OF DIMETHYL TEREPHTHALATE

Heinrich Bunger, Witten-Bommern, Germany, and Otto W. Bleh, deceased, late of Troisdorf-Bergheim, Germany (by Rita M. Bleh, heiress), assignors to Dynamit Nobel Aktiengesellschaft, Germany

Filed Sep. 12, 1973, Ser. No. 396,468

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1972, 2244662

Int. Cl.[2] C07C *69/82*

U.S. Cl. 560—77 **6 Claims**

1. A process for the production of dimethyl terephthalate from the high boiling tarry residues obtained after the combined air oxidation of p-xylene and methyl p-toluate in the liquid phase in the presence of an oxidation catalyst, esterification of the thus-produced acids with methanol, and separation of dimethyl terephthalate, which comprises subjecting the high boiling residues to a methanol treatment at a temperature of from 270° C. to about 350° C. and at pressures of from 5 to about 80 atmospheres gauge, the amount of methanol used being from about 30 to about 500 parts per 100 parts of the high boiling residues, and separating dimethyl terephthalate from the resultant product.

4,126,756

ALKENOL PRODUCTION

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

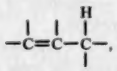
Division of Ser. No. 651,864, Jan. 23, 1976, Pat. No. 4,039,594, which is a division of Ser. No. 484,261, Jun. 28, 1974, Pat. No. 3,960,973. This application Mar. 29, 1977, Ser. No. 782,603

Int. Cl.[2] C07C *29/00, 33/05*

U.S. Cl. 568—879 **7 Claims**

1. A process for the production of alkenols and cycloalkenols which comprises reacting:

(a) at least one alkene or cycloalkene having at least one allylic hydrogen having the basic structure



and having from 3 to 20 carbon atoms per molecule with

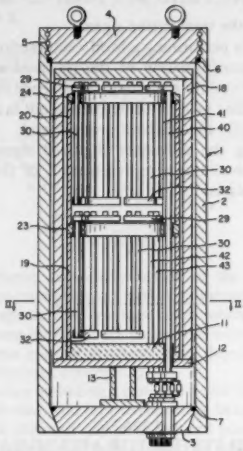
(b) formaldehyde in the presence of

(c) a catalyst selected from the group consisting of organic carboxylic acid salts of Group IB metals under reaction conditions including an elevated temperature and pressure sufficient to produce alkenols and cycloalkenols.

4,126,757
MULTIZONE GRAPHITE HEATING ELEMENT FURNACE

Charles W. Smith, Jr., Fairview, and Franz X. Zimmerman, Erie, both of Pa., assignors to Autoclave Engineers, Inc., Erie, Pa.

Filed Jan. 25, 1978, Ser. No. 872,095
Int. Cl.[2] F27B *5/14;* **F27D** *11/02;* **H05B** *3/06*
U.S. Cl. 13—25 **4 Claims**



1. A multizone furnace having carbon or graphite rod heating elements comprising

a plurality of hollow graphite cylinders having a common generally vertical axis,

a plurality of annular graphite rings having upper and lower seats for engaging the edges of the cylinders,

said cylinders and rings arranged such that a ring is positioned between each adjacent cylinder and a ring rests upon the top of the uppermost cylinder,

said rings extending radially inward of the inner wall of said cylinders forming a horizontal flange, said flanges having a plurality of circumferentially spaced openings therein,

electrically non-conductive spacers positioned in said openings and extending above said ring surface,

graphite heating elements passing through said spacers and being hung from said horizontal flanges,

said elements suspended from each horizontal flange being joined by connecting blocks to form a series circuit,

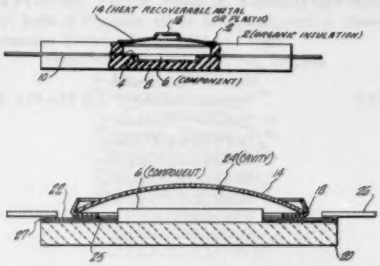
whereby each series circuit associated with one horizontal flange powers a separately controllable heating zone.

4,126,758
METHOD FOR SEALING INTEGRATED CIRCUIT COMPONENTS WITH HEAT RECOVERABLE CAP AND RESULTING PACKAGE

John F. Krumme, Woodside, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 421,429, Dec. 3, 1973, abandoned. This application Apr. 30, 1974, Ser. No. 465,561
Int. Cl.[2] H05K *5/06, 5/03;* **B23P** *11/02*
U.S. Cl. 174—52 FP **16 Claims**

1. A method of sealing a container having at its open end a sealing ring, said sealing ring having a substantially horizontal portion joined to a wall portion to form an acute angle defined by a surface of the horizontal portion and the inner surface of the wall portion, the method comprising bringing a member capable of being rendered heat recoverable to a temperature at which it is at its heat-unstable state and deforming said member in its unstable state to render it heat-recoverable; inserting said heat-recoverable member into an area having a transverse dimension defined by said sealing ring, the heat-recoverable member having a transverse dimension approximately equal to the transverse dimension of said sealing ring; and bringing said heat-recoverable member to a temperature at which it recovers to cause the transverse dimension of said heat-recoverable member to increase whereby said heat-recoverable member, as it recovers from its heat-unstable state, exerts sufficient pressure against the sealing ring to seal said container.

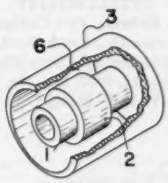


8. An electronic package containing an electrical component comprising a substrate of a ceramic material having electrical conductors metallized thereon for electrically connecting the component, said substrate having walls to encompass the component, a metal ring bonded to the substrate and forming an extension of said walls, and a heat-recoverable sealing member inserted into the area defined by said walls over said component that has been recovered to exert sufficient pressure against said ring to seal the electrical component enveloped therein.

4,126,759
COUPLING MEANS

Philip L. Brooks, Menlo Park, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 592,024, Jun. 30, 1975, Pat. No. 4,092,193. This application Mar. 21, 1977, Ser. No. 779,726
Int. Cl.[2] H01R *5/04*
U.S. Cl. 174—94 R **27 Claims**

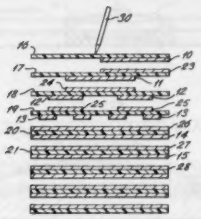


1. Coupling means for joining together at least two substrates comprising an inner member having disposed on its outer surface solder to bind the substrates together, and a heat recoverable outer member which surrounds said inner member so as to define between the inner surface of the outer member and the outer surface of the inner member a space into which the substrates are inserted, the application of heat to fuse said solder occasioning the movement of at least the outer surface toward said inner surface so as to diminish said space and direct the flow of said solder toward the outer member wherein the strength of the couple formed after heating is provided substantially solely by said solder.

4,126,760
POSITION INDICATORS

John A. Gordon, Hatfield, England, assignor to National Research Development Corporation, London, England

Filed Aug. 9, 1977, Ser. No. 823,167
Claims priority, application United Kingdom, Aug. 16, 1976, 33972/76
Int. Cl.[2] G08C *21/00*
U.S. Cl. 178—18 13 Claims

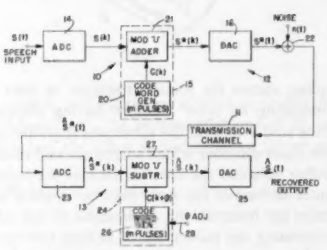


1. Apparatus for indicating a coordinate of a point in a working area, comprising a plurality of generally coextensive, adjacent but spaced apart layers, each layer containing at least one conductor having at least one substantially planar rectangular surface area, each layer extending across the working area and being entirely divided, within the working area, into a number of rectangular zones by conductor surface area boundaries with two opposite boundaries of each zone extending completely across the area of interest substantially at right angles to the direction in which a coordinate is to be measured, each zone being constituted either by at least part of a conductor or by absence of a conductor, and the division into zones being different for each layer, the apparatus including a plurality of contact means, at least one associated with each conductor and spaced therefrom, and the layers and the contact means being so constructed that when a point in the working area is indicated by pressure at that point on an outer layer of the plurality of layers, each conductor which extends to the position corresponding to the point in the layer containing that conductor is pressed into contact with its associated contact means of one or its associated contact means.

4,126,761
METHOD OF AND MEANS FOR PROCESSING AN AUDIO FREQUENCY SIGNAL TO CONCEAL INTELLIGILITY

Daniel Graupe, 2821 Redwing, Fort Collins, Colo. 80521; David L. Cohn, 52732 Arbor Dr., South Bend, Ind. 46635, and G. Donald Causey, 3504 Dunlop, Chevy Chase, Md. 20015

Filed Feb. 11, 1977, Ser. No. 767,904
Int. Cl.[2] H04K *1/02*
U.S. Cl. 179—1.5 R 22 Claims



1. A method of processing an input audiofrequency signal for scrambled transmission through a noisy communication channel and for recovering a representation of such signal comprising:

(a) repetitively performing a Mod ν addition of an n-level, m-pulse codeword to an n-level digitized transformation of the input audio-frequency signal under the condition that $n>2$, and m and ν are integers for obtaining a sum signal;

(b) transmitting the sum signal through the communication channel;

(c) receiving the transmitted signal;

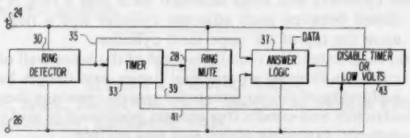
(d) repetitively performing a Mod ν subtraction of an n-level digitized transformation of the received signal and the same codeword for obtaining a difference digitized signal, the subtraction process being carried out in a selected time relationship to the addition process; and

(e) converting the difference digitized signal into analog form for obtaining a representation of the input audio frequency signal.

4,126,762
METHOD AND SYSTEM FOR ACCUMULATING DATA OVER NONDEDICATED TELEPHONE LINES

John R. Martin, 3129 W. Mill Rd., Milwaukee, Wis. 53209, and Robert S. Block, 777 W. Glencoe Pl., Milwaukee, Wis. 53217

Filed May 4, 1976, Ser. No. 683,161
Int. Cl.[2] H04M *11/08*
U.S. Cl. 179—2 A 11 Claims



1. A method of accumulating data at a central location from a plurality of remote locations each including a telephone with an audible signalling means connected to nondedicated telephone lines without interference with normal telephone service comprising the steps of:

providing at each remote location a selectively operable telephone answering device, including an associated data accumulator, connected across the nondedicated telephone lines in parallel therewith;

accumulating data in each data accumulator;

selectively conditioning the answering device at one of the plurality locations to intercept a call over the telephone lines within a predetermined time window without actuating the audible signalling means on the telephone;

initiating a call from the central location to the telephone at one of the plurality of locations subsequent to conditioning the access device, and during the time window;

answering the subsequently initiated call with the answering device to thereby connect the remote and central locations over the nondedicated telephone lines without actuating the audible signaling means on the telephone; and

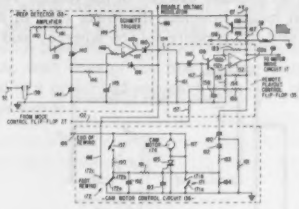
transferring data from the data accumulator at the remote location to a utilization device at the central location over the nondedicated telephone lines connecting the remote and central locations.

4,126,763

CONTROL CIRCUIT FOR A REMOTE CONTROLLED TELEPHONE ANSWERING DEVICE

Sava Jacobson, 8130 Orion St., Van Nuys, Calif. 91406; George T. Buehl, 5656 Wimbleton Way, Fort Worth, Tex. 76133, and Tokuro Narazaki, 1-21-1 Nishi Shinjuku, Shinjuku-ku, Tokyo, Japan

Filed Mar. 31, 1978, Ser. No. 892,326
Int. Cl.[2] H04M *1/64;* G11B *15/44*
U.S. Cl. 179—6 E **5 Claims**



1. In a telephone answering device of the type wherein during automatic answering operation an incoming message is recorded on a tape driven by a tape drive motor, and wherein recorded incoming messages are played out over the telephone line under remote control in response to detection of a beep tone, the improvement comprising:

a cam mechanism including a cam and a cam drive motor for driving said cam, said tape drive motor being positionable by said cam alternatively to a forward position in which said motor drives said message record tape in a forward direction and to a rewind position in which said tape drive motor rewinds said tape, and

a cam motor control circuit comprising:

a silicon controlled rectifier (SCR) connected in series with said cam motor across a source of power,

a first trigger circuit for providing to said SCR a turn-on gate pulse upon detection of said beep tone, turn-on of said SCR providing power to said cam drive motor via said SCR,

a first switch connected across said SCR, said first switch being mechanically operated by said cam so as to be opened only when said cam is in a first orientation with said tape drive motor in said forward position or in a second orientation with said tape drive motor in said rewind position, and to be closed when said cam is otherwise oriented, so that as soon as said SCR is turned on by a gate pulse from said first trigger circuit said cam drive motor will drive said cam away from said first orientation so as to close said first switch, said closure thereby turning off said SCR but providing power to said cam drive motor via said first switch, said cam drive motor thereafter driving said cam to said second orientation, the resultant opening of said first switch disconnecting power from said cam drive motor so that said tape drive motor will rewind said tape,

a second switch mechanically operated by said cam and having a first contact and a switch arm that is brought into connection with said first contact when said cam is in said second orientation,

a disable circuit, including said second switch, for preventing a turn-on gate pulse from being provided by said first trigger circuit upon detection of said beep tone when said switch arm is connected with said first contact,

a third switch actuated upon completion of rewind of said tape, and

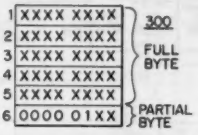
a second trigger circuit for providing to said SCR a turn-on pulse in response to actuation of said third switch, the result turn-on of said SCR causing said cam drive motor to drive said cam away from said second orientation, the resultant closure of said first switch turning off said SCR but providing power to said cam drive motor via said first switch, said cam drive motor thereafter driving said cam to said first orientation, the resultant opening of said first switch disconnecting power from said cam drive motor.

4,126,764

PARTIAL BYTE RECEIVE APPARATUS FOR DIGITAL COMMUNICATION SYSTEMS

David L. Downey, Peoria; James A. Kennedy, and Liston E. Neely, both of Phoenix, all of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 18, 1977, Ser. No. 798,196
Int. Cl.[2] H04J *3/16*
U.S. Cl. 179—15 BA **5 Claims**



1. In a digital communication system for receiving information in groups of bits, each group having a predetermined number of bits, an apparatus for receiving information having a lesser number of bits than said predetermined number in each group, said apparatus comprising:

(a) first means for counting the number of bits in each group of information received;

(b) second means coupled to said first means for determining whether or not said number of bits received is less than said predetermined number of bits in each of said groups; and,

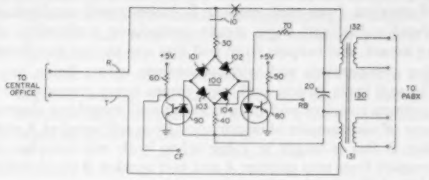
(c) third means coupled to said second means for inserting zero bits to the group of bits having a lesser number of bits of information than said predetermined number.

4,126,765

DETECTOR CIRCUIT FOR SENSING BATTERY POLARITY AND LOOP CLOSURE

John A. Calder, Chicago; Richard M. Rovnyak, Schaumburg, and David Q. Lee, Chicago, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 12, 1977, Ser. No. 859,907
Int. Cl.[2] H04M *7/14*
U.S. Cl. 179—18 AH **9 Claims**



1. A detector circuit for use in a telephone system including at least first and second switching centers connected via a trunk circuit, said detector circuit comprising:

directional current control means connected to said trunk circuit;

a plurality of current detection means connected to said directional current control means, operated in response to application of a DC voltage of a first polarity to said trunk circuit, by said first switching center, conducted through said directional current control means, to transmit a first combination of output signals to said second switching center; and in response to application of a DC voltage of a second polarity to said trunk circuit, by said first switching center, conducted through said directional current

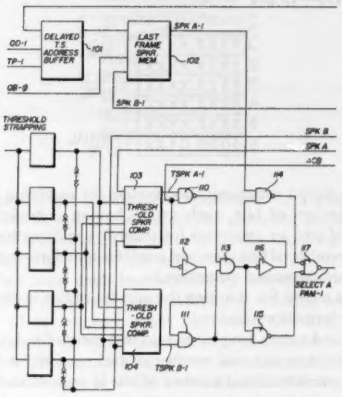
control means, to transmit a second combination of output signals to said second switching center.

4,126,766

3-PORT CONFERENCE CIRCUIT FOR USE IN PRIVATE AUTOMATIC BRANCH EXCHANGE

Donald W. McLaughlin, Naperville, and Gerald F. Fetterer, Mount Prospect, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 5, 1977, Ser. No. 857,165
Int. Cl.[2] H04M *3/56*
U.S. Cl. 179—18 BC **8 Claims**



1. In a pulse code modulated communication system, a plurality of communication channels arranged on a multiplexed basis, a switching system including a memory accessed by said communication channels, and comparison means for comparing and indicating as an output thereof the larger of two samples of information from a speaker A and a speaker B coupled to it, and a conference circuit connected to said memory and to said channels, said conference circuit comprising: a first threshold speaker comparator for comparing an established threshold level with samples of information from said speaker A and indicating as an output thereof that said samples of information from said speaker A exceeds said established threshold level; a second threshold speaker comparator for comparing said established threshold level with samples of information from said speaker B and indicating as an output thereof that said samples of information from said speaker B exceeds said established threshold value; and logic means comprising a plurality of gating means, said outputs from said first and second threshold speaker comparators and said comparison means being coupled to said logic means, said logic means being responsive to said outputs to select and to indicate to said switching system that one of said samples of information from said speaker A and speaker B that is larger in value when both said samples of information from said speaker A and said speaker B exceed said established threshold value.

4,126,767

BOTTOM ACTUATED REACTOR CONTROL SYSTEM

Frank Bevilacqua, Windsor; Joseph R. Dietrich, West Hartford; William S. Flinn, Bloomfield; Malcolm D. Groves, Simsbury, and John M. West, West Hartford, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 7, 1972, Ser. No. 269,770
Int. Cl.[2] G21C *7/12*
U.S. Cl. 176—36 R **12 Claims**

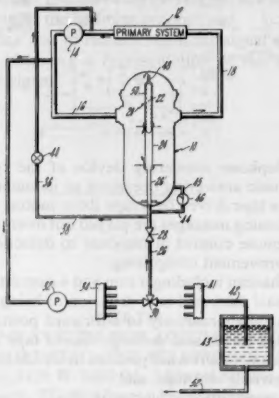
1. In a nuclear reactor, the reactor including a vessel for containing a circulating coolant under pressure and having a fuel assembly disposed therein, the fuel assembly comprising a plurality of fuel elements containing fissionable material and a plurality of guide tubes for movable neutron absorber elements, an improved control system comprising:

a first extension means for each of said guide tubes, said first guide tube extension means extending upwardly from the fuel assembly and terminating within the reactor vessel, said first extension means being coupled to the upper ends of associated guide tubes and cooperating therewith to define hydraulic cylinders;

neutron absorber element means disposed for movement in said hydraulic cylinders;

a source of lift pressure exterior of the reactor vessel;

first conduit means coupling the lower ends of said guide tubes to said lift pressure source whereby said absorber



element means may be raised by application of lift pressure to the bottom of the guide tubes, said first conduit means penetrating the reactor vessel;

means for deriving from the pressurized vessel coolant a cooling flow about said absorber element means when lift pressure is not applied thereto; and

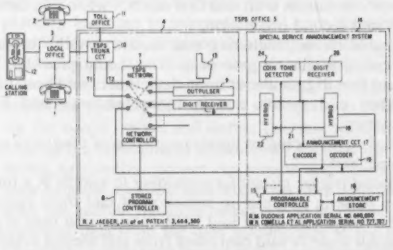
blow-out protection means for preventing undesired raising of said absorber element means upon application of an undesired transient pressure to the exterior of said guide tube extension means which is less than the pressure normally maintained within the reactor vessel, said protection means including means for inhibiting the decay of pressure within said hydraulic cylinders.

4,126,768

PORTABLE AUTOMATIC NUMBER OUTPULSER

Rolland L. Grenzow, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 27, 1977, Ser. No. 810,152
Int. Cl.[2] H04M *1/42*
U.S. Cl. 179—90 B **16 Claims**



1. In an automatic digit outpulser for use in conjunction with a telephone, comprising

a portable electronic card having electronic circuitry encased within the card,

a low-profile acoustic device mounted in the card and arranged for accoustically coupling the card to a transmitter of the telephone and, in the electronic circuitry,

means for storing representations of digits to be outpulsed,

means for converting the stored representations into audible frequency output signals, and

means for transmitting the output signals to the acoustic device, the improvement comprising a plurality of first storage words containing the stored digit representations, and a plurality of second storage words containing information for controlling the generation of interdigital timing periods, with ones of the first storage words being arranged in a prescribed sequence with ones of the second storage words.

4,126,769

MOVING ARMATURE TRANSDUCER WITH REINFORCED AND PIVOTED DIAPHRAGM

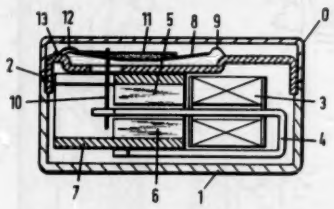
Harmen Broersma, Amsterdam, Netherlands, assignor to Microtel B.V., Amsterdam, Netherlands

Filed Oct. 4, 1977, Ser. No. 839,210

Claims priority, application Netherlands, Oct. 11, 1976, 7611218

Int. Cl.[2] H04R *11/00*

U.S. Cl. 179—115 A **5 Claims**



1. In an electro-acoustic wide band transducer comprising a mounting plate carried in a housing and in turn carrying a drive section including an electric coil and a substantially U-shaped armature supported in such a manner that one leg thereof extends through the coil for free movement between two permanent magnets mounted in a magnet support; an acoustic section comprising a diaphragm carried by a surround secured to the mounting plate; and a coupling member serving to transmit a displacement of the free end of said one leg of the armature to the diaphragm; said diaphragm comprising a stiffened portion secured to the mounting plate adjacent to a portion of said surround so as to be pivotally mounted relatively to said mounting plate; said coupling member being coupled to the diaphragm at a location intermediate the center of gravity of said diaphragm and the location where said stiffened portion borders said surround; said two permanent magnets and said electric coil being arranged on one and the same side of said coupling member; the dimensions and the pivot construction of said stiffened portion, the size of the diaphragm surface area and the location where said coupling member is connected to the diaphragm respectively being such that the low-frequency and the high-frequency efficiencies of said transducer are matched to each other for optimizing the frequency characteristic over the wide-band range.

4,126,770

ECHO CANCELLER

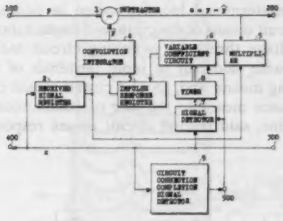
Akira Sato, Tokyo Junzo Tamura, Omiya, and Seishi Kitayama, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 738,876, Nov. 4, 1976, abandoned. This application Feb. 23, 1978, Ser. No. 880,478

Claims priority, application Japan, Nov. 7, 1975, 50-133746

Int. Cl.[2] H04B *3/20*

U.S. Cl. 179—170.2 **2 Claims**



1. An echo canceller for cancelling an echo of an echo path from a reception path to a transmission path, in a telephone circuit, comprising:

a subtractor inserted in the transmission path of said telephone circuit for subtracting a pseudo-echo from a true echo of said transmission path;

a received signal register connected to the reception path of said telephone circuit for temporarily storing a received input of said reception path;

a multiplier connected to said received signal register and said subtractor for producing a product of the residual echo and said received input;

a variable coefficient circuit connected to the output of said multiplier;

circuit connection completion detecting means for detecting a circuit connection completion signal of the telephone circuit and for controlling said variable coefficient circuit;

control means connected to the reception path, said circuit connection completion detecting means and said variable coefficient circuit for reducing the coefficient of the variable coefficient circuit in accordance with the lapse of time of the duration of the received input exceeding a predetermined threshold level after receiving said circuit connection completion signal of the telephone circuit;

an impulse response register connected to the output of said variable coefficient circuit for producing an impulse response of said echo path from said reception path to said transmission path; and

a convolution integrator connected to said received signal register, said impulse response register and said subtractor for providing said pseudo-echo by the use of said received input and said impulse response.

4,126,771

TELEPHONE LINE LIFTING APPARATUS

D. Frederic Proctor, Redmond, and Darrell D. Cole, Seattle, both of Wash., assignors to Proctor & Associates Company, Redmond, Wash.

Continuation-in-part of Ser. No. 782,326, Mar. 29, 1977, abandoned. This application Jul. 27, 1977, Ser. No. 819,268

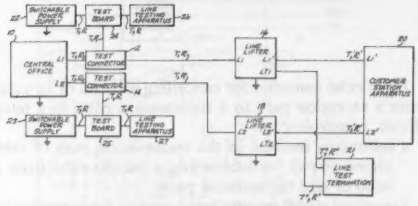
Int. Cl.[2] H04B *3/46*

U.S. Cl. 232—175.3 R **19 Claims**

1. A line lifting apparatus for disconnecting a telephone line, which telephone line has a pair of conductors extending between a central office and a customer station, from the customer station at a predetermined location along the telephone line, said line lifting apparatus comprising:

capacitance means; voltage threshold switching circuit means which is operative to provide a conducting path

therethrough when the voltage thereacross equals or exceeds a predetermined threshold value; bistable switching means having a pair of input terminals, said bistable switching means being operative to switch to and remain in a first state in response to current flow in a first direction between said pair of input terminals, and to switch to and remain in a second state in response to current flow in a second, opposite direction between said pair of input terminals, said bistable switching means being adapted to interconnect the telephone line and the customer station at said predetermined location when in said first state and to disconnect the telephone line from the customer station at said predetermined location when in said second state; first circuit means connecting said capacitance means and said voltage threshold switching circuit means in series circuit with said pair of input terminals of said bistable switching means; and, second circuit means coupling said capacitance means to the pair of conductors of the telephone line, said second circuit means responding to the



presence for a predetermined period of time of a first potential on at least one conductor of the telephone line to charge said capacitance means to a voltage whose magnitude is greater than said threshold value to cause said voltage threshold switching circuit means to provide a conducting path therethrough, and whose polarity is such as to produce current flow in said second direction between said pair of input terminals of said bistable switching means upon discharge of said capacitance means through said series circuit, said second circuit means further responding to the presence for a predetermined period of time of a second potential on at least one conductor of the telephone line to charge said capacitance means to a voltage whose magnitude is greater than said threshold value to cause said voltage threshold switching circuit means to provide a conducting path therethrough, and whose polarity is such as to produce current flow in said first direction between said pair of input terminals of said bistable switching means upon discharge of said capacitance means through said series circuit.

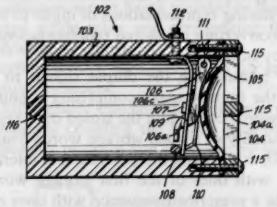
4,126,772

SWITCH FOR DETECTING TIRE PRESSURE

Dennis G. Pappas, 200 E. 58th St., New York, N.Y. 10022; Matthew C. Baum, Westwood, N.J.; Samuel N. Small, Valley Stream, N.Y.; Robert T. Adams, Short Hills, N.J., and Robert P. Freedman, East Northport, N.Y., assignors to Dennis G. Pappas, New York, N.Y.

Filed Aug. 31, 1976, Ser. No. 719,325
Int. Cl.[2] H01H *35/24*
U.S. Cl. 200—61.25 **9 Claims**

1. An air mass sensor apparatus for installation within a pressurized tire interior, said sensor being defined by an air tight housing for receiving an inert gas, said housing being sealed at one end and an impermeable diaphragm at an opposite end, barrier means disposed in proximity to said diaphragm, said diaphragm being responsive to a pressure differential formed at either side thereof, pivotally mounted actuating means (**106**) affixed to said diaphragm within said housing; first contact means (**106***a*, **106***b*) extending from said actuating means (**106**) disposed in electrical circuit relation to second contract (**109**, **110**) means having associated connectors external of said housing; and a connecting member (**108**) disposed in said housing being in electrical circuit relation to said second contract means (**109**, **110**), said connecting member (**108**) being extendable beyond said housing, said connecting member



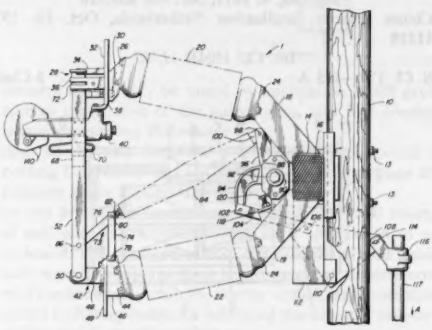
being responsive to movement of said diaphragm inwardly and outwardly of said housing to cause said second circuit means to make and break an electrical circuit through movement of said actuating means.

4,126,773

POLYPHASE DISCONNECTING SWITCH ARRANGEMENT

Joseph Bernatt, Arlington Hts., and Karel Vojta, Chicago, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Mar. 9, 1977, Ser. No. 775,903
Int. Cl.[2] H01H *33/12*
U.S. Cl. 200—146 R **16 Claims**



1. A polyphase disconnecting switch arrangement comprising:

a base member suited for mounting on a support structure;

a polygon-shaped shaft mounted for rotation on said base member;

a first lever mounted on said shaft for rotating said shaft;

means for pivoting said first lever to rotate said shaft;

at least one set of support arms mounted on said base member and extending outwardly therefrom;

first and second insulators respectively mounted on the extending ends of said support arms;

stationary electrical contact means mounted on said first insulator;

switch blade means pivotably mounted on the second insulator, said switch blade means normally engaging said stationary electrical contact means to complete an electrical circuit, said switch blade means being pivotable to disengage said stationary contact means;

a second lever mounted at one end on said shaft adjacent said first and second arms;

a push rod insulator pivotably connected at one end to the other end of said second lever;

means pivotably interconnecting the other ends of said push rod insulator with said switch blade means;

whereby, when said means for pivoting said first lever causes said shaft to rotate, said second lever causes said push rod insulator to pivot said switch blade means to disengage said stationary contact means to open the electrical circuit between said stationary contact means and said switch blade means;

locking means for individually locking said first lever and said second lever to said shaft and permitting said levers to be adjustably positioned along the length of said shaft, wherein said locking means comprises a respective locking member for each of said first and said second levers, said locking member having a polygon-shaped opening formed therethrough dimensioned to slidably mate with said shaft, said opening formed at an angle such that when said respective locking member is bolted to said first or said second levers, the edges of said opening engage said shaft locking said first and said second levers to said shaft.

4,126,774
ELECTRICALLY ILLUMINATED PUSH-BUTTONS AND INDICATORS

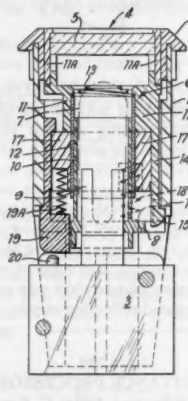
Christopher C. Gossling, Cantelupe Rd., East Grinstead, Sussex, England

Filed Apr. 7, 1977, Ser. No. 785,663

Claims priority, application United Kingdom, Apr. 6, 1976, 13949/76

Int. Cl.[2] G01H 9/04

U.S. Cl. 200—314 **6 Claims**



1. An illuminated push-button or indicator particularly adapted for use in areas of hazardous atmosphere comprising a housing having a lamp holder at one end thereof, said lamp holder having a first tubular sleeve member extending therefrom to enclose a lamp connected to said lamp holder, and a plunger member detachably mounted on the other end of said housing, said plunger member being slidable in said housing and comprising a first portion closed at one end thereof by a translucent portion and having at the other end thereof a second tubular sleeve member adapted to telescopically engage said first tubular sleeve member so that said tubular sleeve members are telescopically slidable relative to each other upon actuation of said plunger member said sleeve members forming a gap preventing flame from an interior explosion from reaching the exterior atmosphere.

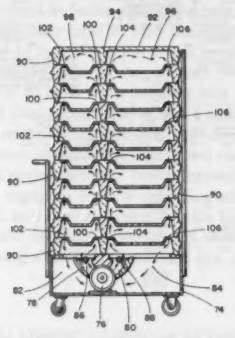
4,126,775
HEATED FOOD SERVICE SYSTEM

William B. Wyatt, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

Division of Ser. No. 601,286, Aug. 4, 1975, Pat. No. 4,052,589, and a continuation-in-part of Ser. No. 508,091, Sep. 23, 1974, abandoned. This application Jul. 1, 1977, Ser. No. 812,383

Int. Cl.[2] F27D 11/02

U.S. Cl. 219—400 **10 Claims**



1. A food service system comprising a base structure having an inlet and an outlet provided therein, means in said base structure for supplying air through said outlet, a stack of matched compartmented thermally insulated trays disposed on top of said base structure, a cover on top of said stack, one compartment in each tray positioned over a corresponding compartment in a tray below to form a column of compartments, said trays being provided with openings around said compartments, said openings being positioned relative to said inlet and said outlet whereby air may flow upwardly through some of said openings from said outlet and downwardly through other of said openings to said inlet.

4,126,776
METHOD OF PREPARING FOOD ITEMS FOR SUBSEQUENT RETHERMALIZATION IN A MICROWAVE OVEN

Donald G. Moore, Glencoe, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Division of Ser. No. 574,430, May 5, 1975, Pat. No. 3,999,027. This application Jun. 4, 1976, Ser. No. 692,740

Int. Cl.[2] H05B 9/06

U.S. Cl. 219—10.55 M **10 Claims**

1. The method of preparing foods for subsequent rethermalization, which comprises the steps of:

successively placing different food loads comprising prepackaged individual food items in a predesignated microwave oven cavity; sensing electromagnetic fields with said food loads in said oven cavity;

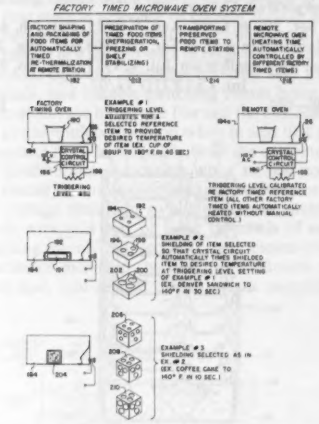
developing electrical signals proportional to the sensed electromagnetic fields in said oven cavity when said food loads are successively placed therein;

integrating each of said electrical signals with respect to time at a predetermined rate to produce a control voltage level;

observing the temperature state of said individual food items and adjusting said rate of integration and said control voltage level until a selected individual food item has reached a desired temperature condition;

recording the control voltage level when said selected individual food item reaches a desired temperature condition; and

establishing single values for each of said control voltage level and said rate of integration so that all of said different


FACTORY TIMED MICROWAVE OVEN SYSTEM
FACTORY SHAPING AND PACKAGING OF FOOD ITEMS FOR AUTOMATICALLY TIMED RE-THERMALIZATION AT REMOTE STATION
PRESERVATION OF TIMED FOOD ITEMS (REFRIGERATION, FREEZING OR SHELF STABILIZING)
TRANSPORTING PRESERVED FOOD ITEMS TO REMOTE STATION
REMOTE MICROWAVE OVEN (HEATING TIME AUTOMATICALLY CONTROLLED BY DIFFERENT FACTORY TIMED ITEMS)
FACTORY TIMING OVEN
EXAMPLE # 1
REMOTE OVEN
CRYSTAL CONTROL CIRCUIT
TRIGGERING LEVEL ADJ.
TRIGGERING LEVEL CALIBRATED RE FACTORY TIMED REFERENCE ITEM (ALL OTHER FACTORY TIMED ITEMS AUTOMATICALLY HEATED WITHOUT MANUAL CONTROL)
EXAMPLE # 2
EXAMPLE # 3

food loads may be successively brought to a correspondingly desired temperature condition.

4,126,777

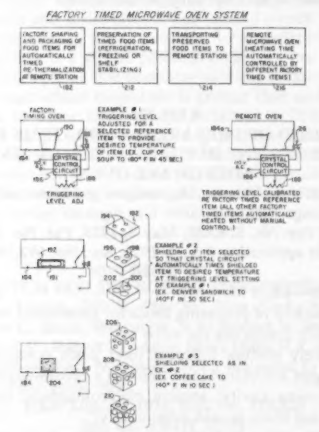
METHOD OF AUTOMATICALLY RETHERMALIZING PREVIOUSLY PREPARED FOOD FOR CONSUMPTION

Donald G. Moore, Glencoe, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Division of Ser. No. 574,430, May 5, 1975, Pat. No. 3,999,027. This application Jun. 4, 1976, Ser. No. 692,742

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 M **5 Claims**


FACTORY TIMED MICROWAVE OVEN SYSTEM
FACTORY SHAPING AND PACKAGING OF FOOD ITEMS FOR AUTOMATICALLY TIMED RE-THERMALIZATION AT REMOTE STATION
PRESERVATION OF TIMED FOOD ITEMS (REFRIGERATION, FREEZING OR SHELF STABILIZING)
TRANSPORTING PRESERVED FOOD ITEMS TO REMOTE STATION
REMOTE MICROWAVE OVEN (HEATING TIME AUTOMATICALLY CONTROLLED BY DIFFERENT FACTORY TIMED ITEMS)
FACTORY TIMING OVEN
EXAMPLE # 1
REMOTE OVEN
CRYSTAL CONTROL CIRCUIT
TRIGGERING LEVEL ADJ.
TRIGGERING LEVEL CALIBRATED RE FACTORY TIMED REFERENCE ITEM (ALL OTHER FACTORY TIMED ITEMS AUTOMATICALLY HEATED WITHOUT MANUAL CONTROL)
EXAMPLE # 2
EXAMPLE # 3

1. The method of rethermalizing previously prepared foods for consumption which comprises the steps of:

preparing at a first location, a package of food items for subsequent rethermalization at a second location, said preparing including placing said package in a first predesignated microwave oven cavity, sensing an electromagnetic field with said food package in said oven cavity, developing an electrical signal from said sensed electromagnetic field proportional to the level of microwave energy in said oven cavity when said food package is placed therein, heating a selected individual food item to a desired temperature, and selectively shielding the remaining food items so that each item reaches a desired temperature in the same time as the selected food item;

integrating the voltage level produced by said electrical system at an established rate producing an established voltage level coincident in time for said food items reaching their desired temperatures;

storing said prepared food items to prevent spoilage thereof;

transporting said stored food items to said second location;

placing said package of food items in a second predesignated microwave oven cavity at said second location, said second predesignated microwave oven being similar to said first microwave oven and being calibrated to integrate at said established rate electrical signals proportional to the microwave energy level in said cavity and to retain as a reference signal said established voltage level, and

monitoring the value of the integration of said distinctive electrical signals and terminating the application of microwave energy when the value of said integration corresponds to the value of said referdnce signal.

4,126,778

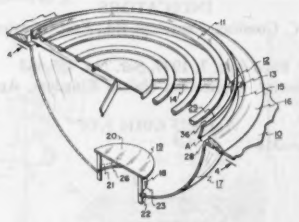
COOKING-STOVE STRUCTURE

Edward D. Cole, Emery Star Rte., Huntington, Utah 84528

Filed Jun. 20, 1977, Ser. No. 808,139

Int. Cl.[2] H05B *3/68*

U.S. Cl. 219—461 **10 Claims**



1. In a cooking stove having a horizontal range top having a burner aperture and provided with an energizable, horizontally disposed electrical heating element aligned with said aperture, supporting means supported by said range top for supporting said electrical heating element, an upwardly concave, single bowl, for said heating element, supported by said range top and extending beneath said electrical heating element, said bowl having a central base aperture: an improvement comprising reflecting means disposed between said aperture and said heating element, and support means, free from but positionably engaging said bowl at said central base aperture, for so supporting said reflecting means.

4,126,779

REMITTANCE PROCESSOR

Leonard J. Jowers, Adamsville; James C. Kennemer, Birmingham; William J. Long, Birmingham; Charles A. Long, Jr., Birmingham, and Robert L. Babanats, Adamsville, all of Ala., assignors to Amer-o-Matic Corporation, Bessemer, Ala.

Filed Jun. 4, 1976, Ser. No. 693,237

Int. Cl.[2] G06K *1/14;* **G06F** *15/12*

U.S. Cl. 235—432 **13 Claims**

1. Apparatus for processing remittance and transaction documents by operating an encoder having a keyboard for generating a plurality of keyboard signals in accordance with a program, comprising:

means for reading information stored on a transaction document and for generating a first set of digital signals representative thereof;

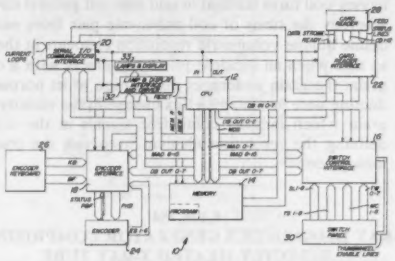
a memory for storing a program of processing remittance and transaction documents;

a central processor unit operatively associated with said memory for sequentially generating a plurality of groups of data signals in accordance with a program stored in said memory;

means operatively associated with said central processor unit and said reading means for transmitting said first set of digital signals representative of said transaction document information to said central processor unit in response to one of said groups of central processor unit data signals;

means for displaying numeric information stored on a transaction document;

means operatively associated with said display means and said central processor unit for causing said display means to display said numeric information in response to another of said groups of central processor unit data signals;



means operatively associated with said central processor unit for sensing the states of a plurality of switches and for generating a second set of digital signals representative of endorsement information as a function thereof;

means operatively associated with said central processor unit and said switch sensing means for transmitting said second set of digital signals representative of endorsement information to said central processor unit in response to another group of said central processor unit data signals; and

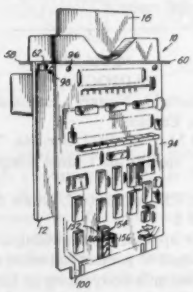
means operatively associated with an encoder and said central processor unit for causing for encoder to encode a remittance document with the transaction document information and to endorse the transaction document with the endorsement information in response to another group of said central processor unit data signals.

4,126,780

ON THE FLY OPTICAL CARD READER

Alan S. Rosenthal, New York; Bernard R. Fernau, Malverne, and Stanley Seifer, West Hempstead, all of N.Y., assignors to Decicom Systems, Inc., Farmingdale, N.Y.

Filed Sep. 17, 1976, Ser. No. 724,187
Int. Cl.[2] G06K *7/14, 5/00, 13/00*
U.S. Cl. 235—458 **41 Claims**



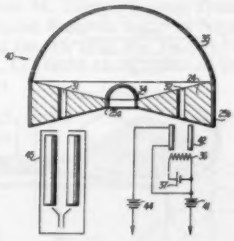
1. An on-the-fly card reader for use for a time card having identifying indicia in the form of punched holes on a portion thereof arranged in a plurality of digits spaced in one direction along said card comprising card guide means defining a path for the displacement of said card in a direction substantially parallel to said one direction along said card and including a wall for support of said card during such displacement; lamp housing means mounted on said card guide means in spaced relation to said wall and being formed with an elongated slot opening for transmission of light, said lamp housing slot opening being positioned in facing relation to said wall and extending substantially transverse to said one direction along said card; a plurality of light detection means mounted on said wall along a substantially straight line aligned with and in facing relation relative to said lamp housing slot opening for the passage of said card therebetween; and a spring member positioned to bias said card against said wall on opposed sides of said light detection means as viewed in said one direction along said card, said spring member being formed with a substantially flat card engaging portion extending substantially parallel to said wall, said card engaging portion being formed with an elongated slot opening in the region thereof intermediate said lamp housing slot opening and said line of light detection means.

4,126,781

METHOD AND APPARATUS FOR PRODUCING ELECTROSTATIC FIELDS BY SURFACE CURRENTS ON RESISTIVE MATERIALS WITH APPLICATIONS TO CHARGED PARTICLE OPTICS AND ENERGY ANALYSIS

Melvin W. Siegel, Pittsburgh, Pa., assignor to Extranuclear Laboratories, Inc., Pittsburgh, Pa.

Filed May 10, 1977, Ser. No. 795,614
Int. Cl.[2] B01D *59/44;* **H01J** *39/34*
U.S. Cl. 250—281 **59 Claims**

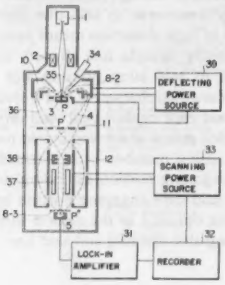


1. In a method of establishing electric fields in an ethereal medium for the collection of selected ions, the use adjacent to said medium of a resistive material through which a predetermined electric current flow density is produced by applying different potentials to said material at spaced locations thereon, thereby generating a predetermined electric field in said adjacent medium, the method comprising the controlled selection by spatial focusing of a portion of ions having predetermined physical properties in said medium adjacent said resistive material by the electric field so established and the collection of said portion of ions.

4,126,782
ELECTROSTATIC CHARGED-PARTICLE ANALYZER

Katsuhisa Usami, Tokyo, and Isao Ishikawa, Hino, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 26, 1977, Ser. No. 762,719
Claims priority, application Japan, Feb. 9, 1976, 51/12283; Jun. 9, 1976, 51/66541
Int. Cl.[2] G01M *23/00;* H01J *39/00*
U.S. Cl. 250—305 6 Claims

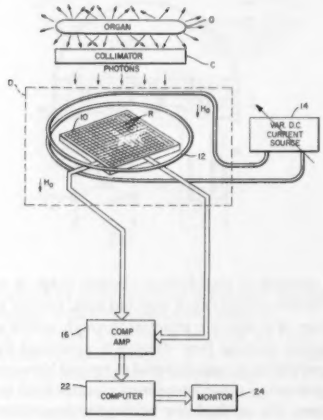


1. In apparatus for analyzing charged particles emitted from a sample by irradiating it with a primary beam, an electrostatic charged-particle analyzer comprising a deflecting electrode system which focuses said charged particles on the axis of said primary beam or an extension thereof or on an identical circumference about said axis or said extension, a slit disposed at the focusing position of said charged particles, a cylindrical mirror type analyzing system having its object point at said focusing position, a detector which detects said charged particles received from said cylindrical mirror type analyzing system, and a mass analysing system which is coaxially arranged inside said cylindrical mirror type analyzing system.

4,126,783
RADIATION IMAGING SYSTEM

Richard C. Lanza, and A. Robert Sohval, both of Cambridge, Mass., assignors to Butler-Newton, Inc., Newton, Mass.

Filed May 25, 1977, Ser. No. 800,411
Int. Cl.[2] G017 *1/00*
U.S. Cl. 250—336 10 Claims



1. A radiation imaging system comprising

A. a colloid body composed of small grains of a dense superconducting material suspended in a binder, said body being positioned for exposure to photons incident from a selected general direction,

B. a cryostat for maintaining the temperature of the grains below the critical value at which they can become superconducting,

C. means for applying an external magnetic field to the body so as to maintain the grains in a metastable super-conducting state in the absence of radiation,

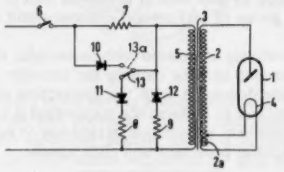
D. a first set of sensing coils spaced apart in one direction through said body other than said selected general direction,

E. a second similar set of sensing coils spaced apart in a second direction through said body other than said first and said selected general directions, said second set of coils intersecting the first set of coils, each said set of coils having coil turns stacked in said selected general direction whereby the turns of coil pairs, one pair from each set, define unique volumetric resolution elements in the body so that when an incident photon interacts with a colloid grain, the grain undergoes a transition to its normal conducting state producing a flux change in the vicinity of the grain which induces coincident signals in the coil pair defining the resolution element in which the transition took place.

4,126,784
X-RAY DIAGNOSTICS GENERATOR COMPRISING A DIRECTLY HEATED X-RAY TUBE

Eickhardt Soeder, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 4, 1977, Ser. No. 793,630
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1976, 2652940
Int. Cl.[2] H05G *1/10*
U.S. Cl. 250—421 5 Claims



1. An x-ray diagnostics generator comprising an x-ray tube and a high voltage transformer wherein the heating filament of the x-ray tube is connected to one portion of the secondary winding of the high voltage transformer, and wherein a photograph-release mechanism is disposed in the primary circuit of the high voltage transformer, a voltage divider for providing primary voltage to said transformer, said voltage divider including a first resistor connected in series with said photograph-release mechanism and a switch connected across said first series connected resistor.

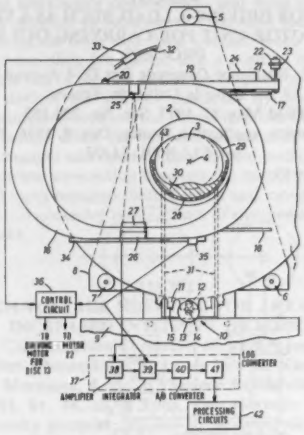
4,126,785
RADIOGRAPHY

Godfrey N. Hounsfield, Newark, England, assignor to EMI Limited, Hayes, England

Filed May 12, 1977, Ser. No. 796,309
Claims priority, application United Kingdom, May 18, 1976, 20436/76
Int. Cl.[2] A61B *6/02;* G01N *23/08*
U.S. Cl. 250—445 T 5 Claims

1. Radiographic apparatus comprising a source of penetrating radiation disposed to project radiation through a cross-sectional slice of a patient's body along at least one substantially linear beam path, detector means disposed to receive the radiation emergent from the body along said at least one beam path,

and to provide output data indicative of the amount of radiation so detected, lateral scanning means for scanning said source and detector means laterally across said slice, alternate lateral scanning movements being in opposing directions, and



rotational scanning means for scanning said source and said detector means angularly around said slice, means for detecting the heartbeats of said patient and means for synchronising said lateral scanning to said heartbeats.

4,126,786

RADIOGRAPHY

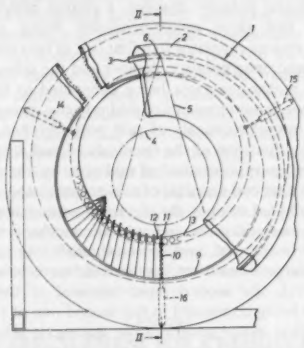
Christopher Archibald G. LeMay, Osterley, and Alan G. Blay, Kenley, both of England, assignors to EMI Limited, Hayes, England

Filed Jun. 20, 1977, Ser. No. 808,146

Claims priority, application United Kingdom, Jun. 26, 1976, 26728/76

Int. Cl.[2] A61B *6/02;* **G01N** *23/08*

U.S. Cl. 250—445 T **7 Claims**



1. Radiographic apparatus including means for projecting X-radiation through a substantially planar region of a patient position from a plurality of positions disposed angularly thereabout, detector means, each for detecting the radiation emergent from the patient position in sequence along a group of substantially linear paths originating from a range of said positions, and collimator means for defining said paths and shielding said detector means from scattered radiation, said collimator means being tiltable, in the plane of said region to permit radiation, originating from said range of positions, to impinge upon said detector means.

4,126,787

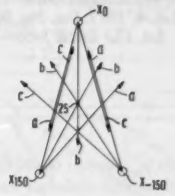
RADIOGRAPHY

Godfrey N. Hounsfield, Newark, England, assignor to EMI Limited, Hayes, England

Continuation of Ser. No. 751,799, Dec. 17, 1976, abandoned, which is a division of Ser. No. 544,799, Jan. 28, 1975. This application Dec. 15, 1977, Ser. No. 860,722

Int. Cl.[2] A61B *6/02;* **G01N** *23/04*

U.S. Cl. 250—445 T **7 Claims**



1. An apparatus, for examining a body by means of penetrating radiation, including means for generating output signals, representative of the absorption suffered by the radiation in passage along respective beam paths through a region of the body, for processing to provide a representation of the distribution of absorption of the radiation in the region, and combining means for combining groups of output signals each group relating to at least two beam paths, chosen so that the beam baths pass through a common elemental area of the region from different directions, to provide composite output signals representing the absorption of the radiation in passage through the body along composite beam paths of which the width varies differently from the widths of the component beam paths so that said processing can be effected on a plurality of output signals including at least some of said composite output signals.

4,126,788

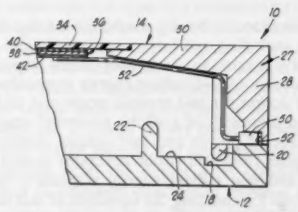
PHOTORECEPTOR PLATE CASSETTE FOR USE IN AUTOMATED X-RAY IMAGE PROCESSING SYSTEMS

Paul G. Koontz, Granada Hills; Richard L. Wright, Canoga Park, and Arthur M. Cantu, Thousand Oaks, all of Calif., assignors to Hipoint Research, Inc., Van Nuys, Calif.

Filed Jun. 16, 1977, Ser. No. 807,112

Int. Cl.[2] G03B *41/16;* **G03G** *15/00*

U.S. Cl. 250—481 **7 Claims**



1. In a cassette adapted to receive a photoreceptor plate and adapted for use in an automated x-ray image processing system, said cassette being comprised of a base member for supporting said photoreceptor plate, a top cover rotatably hinged to the base member for enclosing said photoreceptor plate in a light-impenetrable environment, an electrode for minimizing image smear affixed to the inside of said top cover and electric

contact means for charging said electrode connected to said electrode, the improvement which comprises:

said top cover including a highly x-ray transparent light-impenetrable window member attached thereto;

said electrode being affixed to said window member; and

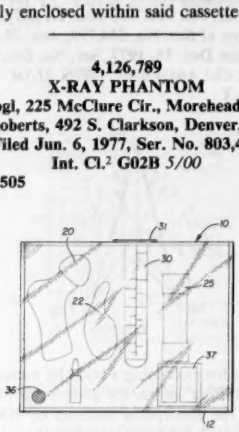
said electric contact means for charging said electrode being positioned within said top cover whereby when said top cover is closed on said base member, said contact means are entirely enclosed within said cassette.

4,126,789

X-RAY PHANTOM

Thomas M. Vogl, 225 McClure Cir., Morehead, Ky. 40351, and Evelyn L. Roberts, 492 S. Clarkson, Denver, Colo. 80209

Filed Jun. 6, 1977, Ser. No. 803,474
Int. Cl.[2] G02B *5/00*
U.S. Cl. 250—505 **10 Claims**



1. An improved x-ray phantom comprising

(a) a closed casing of radiolucent material,

(b) a sea water-like liquid filling said casing and serving as an x-ray scattering medium that simulates the x-ray response of human body fluids,

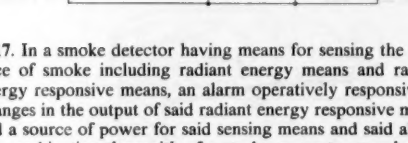
(c) an x-ray target object mechanically suspended within said casing and liquid for radiographic evaluation.

4,126,790

STROBED SMOKE DETECTOR

Elias E. Solomon, 20 Christina Ct., Duxbury, Mass. 02332

Filed Sep. 20, 1976, Ser. No. 725,036
Int. Cl.[2] G01N *21/28*
U.S. Cl. 250—564 **17 Claims**



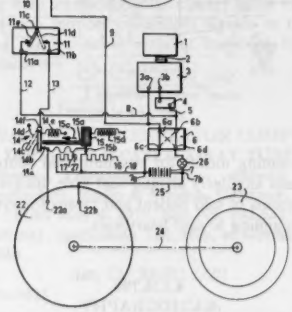
17. In a smoke detector having means for sensing the presence of smoke including radiant energy means and radiant energy responsive means, an alarm operatively responsive to changes in the output of said radiant energy responsive means and a source of power for said sensing means and said alarm, the combination therewith of a strobe generator coupled between said source of power and said sensing means, means coupling the pulses from said strobe generator to said radiant energy means and said radiant energy responsive means, a supervisory circuit for checking the condition of said source of power, said supervisory circuit being connected to said strobe generator for periodic operation and comprising a comparator circuit including means for developing a substantially constant reference voltage, means for developing a test voltage varying with the condition of said source of power, means for periodically comparing the values of said test voltage and said reference voltage, and an alarm operative in a response to said test voltage falling below said reference voltage, and a strobe gate coupled from the output of said strobe generator, said means for developing a substantially constant reference voltage including a regulating circuit coupled in series with the strobe gate for developing said reference voltage.

4,126,791

PROCESS FOR DRIVING A LOAD, SUCH AS A VEHICLE, AND MOTOR UNIT FOR CARRYING OUT SAID PROCESS

Jean J. Raud, Residence Concorde Bat D, 4 Avenue President Roosevelt, 19 100 Brive la Gaillarde, France

Filed May 23, 1977, Ser. No. 799,455
Claims priority, application France, Dec. 8, 1976, 76 36929
Int. Cl.[2] B60L *11/02*
U.S. Cl. 290—11 **5 Claims**



1. A motor unit for driving a vehicle able to move intermittently by momentum and comprising at least two propulsion components such as wheels or the like, said motor unit comprising first and second electric motor-generators each operatively associated with one of said propulsion components, a third electric motor-generator driven by a kinetic energy source, an accumulator connected to said third motor-generator, an automatic polarity changer, a charge regulator, one terminal of said third motor-generator being connected through said charge regulator to a first one of two input terminals of said automatic polarity changer and the other terminal of said third motor-generator being connected to the second one of said two input terminals of said polarity changer, a first one of two output terminals of said polarity changer being connected to a first one of the terminals of said accumulator, and the second output terminal of said polarity changer being connected to a second terminal of said accumulator, said regulator being adapted to open the electrical connection between said third motor-generator and said accumulator when said accumulator is charged, and to re-establish said connection when the charge of said accumulator drops below a preset minimum level, the second input terminal of the polarity changer also being connected to the second one of two terminals of said first motor-generator, an automatic selector contactor, the first input terminal of the polarity changer also being connected to the first of two input terminals of said automatic selector contactor, an output terminal of said contactor being connected to the first terminal of the first electric motor-generator, a control component, a control contactor having a movable element mechanically operable by said control component, the second input terminal of the first electric motor-generator being permanently connected to said movable element, said control contactor having a fixed contact connected to the first terminal of the second motor-generator, a rheostat regulating device comprising a first and second resis-

tor, each of said resistors being connected at one end to said second terminal of the accumulator, the first terminal of the accumulator being further connected to the second terminal of the second electric motor-generator, said rheostat regulating device having a slide mechanically linked to the control component and electrically connected to said fixed contact, said slide being adapted to separate said movable element of the control contactor from said fixed contact when the control component and slide are moved into a position in which the slide is at the end of the first one of the resistors of the rheostat reguating device, the selector contactor (i) establishing an electric connection between the output terminal and first input terminal thereof when the movable element of the control contactor engages said fixed contact thereof, and (ii) establishing an electrical connection between the output terminal and the second input terminal thereof when said movable element of said control contactor is moved out of engagement with said fixed contact.

4,126,792

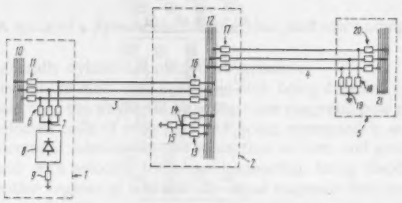
HIGH-VOLTAGE NETWORK FOR AREAS OF INCREASED INTENSITY OF ICING

Georgy A. Genrikh, ulitsa Chekistov, 10, kv. 3; Leonid A. Nikonets, ulitsa Khasanskaya, 8, kv. 4; Petr R. Khrusch, ulitsa Pavlika Morozova, 4, kv. 3; Vladimir P. Oleinik, ulitsa Engelsa, 101, kv. 14, all of Lvov, and Alexandr A. Neiman, Volgogradsky prospekt, 169, kv. 10, Moscow, all of U.S.S.R.

Filed Dec. 8, 1976, Ser. No. 748,537

Int. Cl.[2] H02B *1/00*

U.S. Cl. 307—112 **23 Claims**



1. A high-voltage network for areas of increased intensity of icing comprising a supply substation; a distribution substation equipped with a common busbar system; a first overhead transmission line connecting said supply substation and said distribution substation; a second overhead transmission line leading from said distribution substation; a rectifier for melting the icing on the conductors of said overhead transmission lines with direct current by using a ground as a return conductor, said rectifier being installed at said supply substation; a switching center installed at said distribution substation which, during the operational condition of the high-voltage network, connects said first overhead transmission line and said second overhead transmission line to said common busbar system of said distribution substation and, during deicing of the conductors of said second overhead transmission line, connects at least two conductors of said first overhead transmission line to one of the conductors of said second overhead transmission line.

4,126,793

CIRCUIT ARRANGEMENT FOR A REMOTE CONTROL RECEIVER

Hans de Vries, Illnau, Switzerland, assignor to Zellweger Uster Limited, Uster, Switzerland

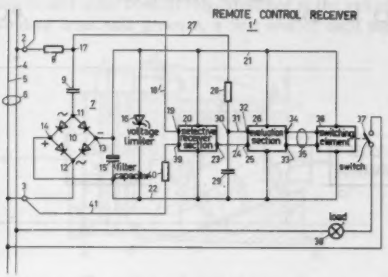
Filed Oct. 18, 1976, Ser. No. 738,897

Claims priority, application Switzerland, Dec. 3, 1975, 15705/75

Int. Cl.[2] H01H *47/20*

U.S. Cl. 307—129 **8 Claims**

1. A circuit arrangement for a remote control receiver receiving remote control signals by means of a power supply network, comprising a remote control receiver comprising a selective receiver section having an input side, a circuit containing at least one non-liner circuit element connected with the input side of the selective receiver section, and means for compensating at the input side of the selective receiver section the ambiguity of the response characteristic of the remote



control receiver to preclude response of the selective receiver section to disturbance signals produced by said at least one non-linear circuit element and to render said selective receiver section only responsive to a given assigned frequency to which the remote control receiver should respond.

4,126,794

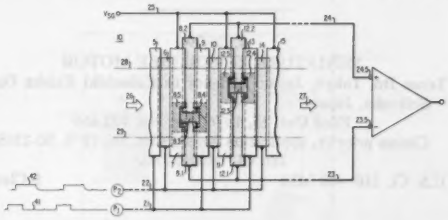
SEMICONDUCTOR CHARGE COUPLED DEVICE WITH SPLIT ELECTRODE CONFIGURATION

Michael F. Tompsett, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 25, 1977, Ser. No. 818,411

Int. Cl.[2] G11C *19/28;* H03H *7/28;* H01L *29/78, 29/04*

U.S. Cl. 307—221 D **10 Claims**



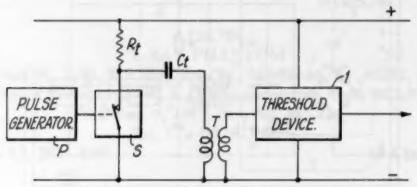
1. In a semiconductor apparatus comprising a semiconductor charge coupled device having a transfer channel of one conductivity type, an electrode pair separated by a gap extending transversely across the entire channel except for said gap, a connecting region of opposite conductivity type in the semiconductor region underlying said gap, a signal charge packet input means and a charge packet output means, respectively, for injecting charge packets into the device and for collecting charge packets from the device after transfer through the channel in a downstream direction in response to clock phase voltage pulses applied to at least one electrode extending across the entire channel proximate to said electrode pair:

a localized barrier region, located in said transfer channel, characterized by a higher electrical threshold voltage than that of said channel, said barrier region being contiguous with an entire first edge of the connecting region on the downstream side of said connecting region and being noncontiguous with second and third edges of said connecting region perpendicular to the first edge.

4,126,795
TIMING UNIT

Ernest J. Moorey, 148 Cleeve Dr., Ivybridge, Devon, England

Filed Apr. 20, 1977, Ser. No. 789,089
Claims priority, application United Kingdom, Apr. 22, 1976, 16267/76
Int. Cl.[2] H03K 5/153
U.S. Cl. 307—293 4 Claims

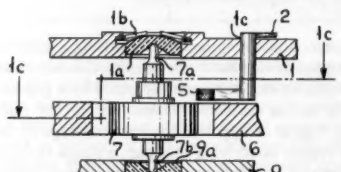


1. A timing unit comprising a capacitor, a resistive charging circuit connected to the capacitor, for charging said capacitor at a predetermined rate, a transistor switch element having its main electrode connected between one side of the capacitor and a reference potential, a pulse generating circuit for applying to the switch control electrode of the switch element a train of short duration sampling pulses each of which causes closure of the switch element for short periods of time such that the capacitor is only partially discharged during each closure of the switch element, a pulse transformer having its primary winding connected between the other side of the capacitor and said reference potential to provide output pulses of said short duration to its secondary output winding, much less than the time required for complete discharge of the capacitor through the pulse transformer, said output pulses having an amplitude proportional to and representing the instantaneous voltage across the charging capacitor, and a threshold device connected to the pulse transformer to provide an output signal when said output pulses reach a threshold amplitude, after a predetermined time interval which is determined by the value of the capacitor and the sampling pulse duration.

4,126,796
MINIATURE REVERSIBLE MOTOR

Teruo Ito, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Oct. 15, 1976, Ser. No. 732,659
Claims priority, application Japan, Oct. 16, 1975, 50-124523
Int. Cl.[2] H02K 1/02
U.S. Cl. 310—40 MM 5 Claims

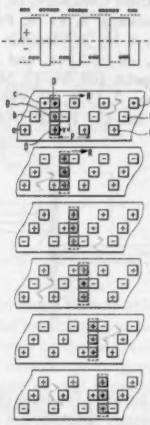


1. A miniature reversible motor, comprising:
a rotor having an axis of rotation and a plurality of permanant magnetic pole pairs spaced peripherally about said rotor;
a stator having a circular pole face opposite the periphery of said rotor and concentric with the axis of rotation of said rotor;
means for magnetizing said stator to effect rotation of said rotor;
a magnetic member of high permeability magnetic material positioned proximate the periphery of said rotor and magnetically coupling with magnetic poles of said rotor for determining a direction of rotation of said rotor;
means for mounting said magnetic member proximate the periphery of said rotor; and
wherein said means for mounting includes positioning means operable for changing the position of said magnetic member relative to the periphery of said rotor to change the direction of rotation of said rotor determined by the relative position of said magnetic member and the periphery of said rotor.

4,126,797
ELECTROMAGNETIC DRIVING DEVICE

Alberto Kling, Seestrasse 38, D-8131 Berg, Fed. Rep. of Germany

Filed Nov. 16, 1976, Ser. No. 742,503
Claims priority, application Fed. Rep. of Germany, May 24, 1976, 2623234
Int. Cl.[2] H02K 37/00
U.S. Cl. 310—46 25 Claims



1. An electromagnetic driving device comprising two parts which are movable relative to one another, each part supporting a plurality of magnetic poles which act together with the magnetic poles of the other respective part to produce a force causing a relative movement of the parts, the poles of at least one part being designed as electromagnetic poles whose magnetic polarization is controlled, the poles of at least one part being arranged in at least three groups extending in a direction of relative movement and the pole spacings within each group, measured in the direction of relative movement, being constant and of equal magnitude in all groups, and the poles of the other respective part which cooperate with the poles disposed in groups being arranged in at least one grouping which extends at an angle to the direction of relative movement and which traverses the entire width covered by the pole groups of said first part, the poles of each group of said first part being displaced relative to the poles of the group immediately preceding it in the polarity change sequence by a displacement distance proceeding from the direction of inclination of the pole grouping of the second part, measured parallel to the direction of relative movement and corresponding to a whole fraction of the pole distance of poles within each group which succeed one another in the direction of relative movement (pole pitch), but corresponding to at least the quotient of the pole pitch and the total number of groups, said electromagnetic poles of the one part being simultaneously changeable in polarity, the current input of each electromagnetic pole of said one part being controlled such that a polarity change to the same polarity as

in a cooperating pole of constant polarity of the other part takes place at the very instant at which this cooperating pole comes to a position opposite the pole to be changed after having moved toward it, a polarity change to a polarity opposite the polarity of the cooperating poles of constant polarity of the other part taking place, dependent of whether the succeeding poles of each pole group all have the same or alternately opposite polarity at each moment, at the very instant at which the pole of constant polarity which moves towards the electromagnetic pole to be changed is positioned at a distance from the pole to be changed which permits a magnetic force of attraction to be effective.

4,126,798

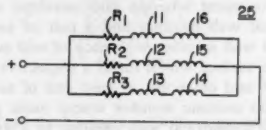
SUPERCONDUCTIVE WINDING

Walter J. Carr, Jr., and Daniel W. Deis, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 538,289, Jan. 2, 1975, now Defensive Publication No. T945,002. This application May 31, 1977, Ser. No. 801,481

Int. Cl.[2] H02K *3/48*

U.S. Cl. 310—204 **5 Claims**



1. A rotor of a dynamoelectric machine, said rotor comprising:

a generally cylindrical rotor core structure;

a plurality of multi-turn coils, said coils being disposed upon said core thereby defining at least one magnetic pole pair, selected coils of each pole pair being connected in series electrical relationship one to another to form coil groups, said coils selected for series connection being disposed within regions of substantially equal magnetic field intensity, said series connected coil groups being connected in parallel electrical relationship, and

a plurality of resistance elements, said resistance elements being connected in series with said series connected coils, the magnitude of each resistance element being predetermined according to the intensity of the surrounding magnetic field.

4,126,799

DEVICE FOR SECURING END CONNECTORS OF ELECTRIC MACHINE STATOR WINDING

Vadim I. Iogansen, ulitsa Gavanskaya, 34, kv. 167; Ibragim A. Kadi-Ogly, Tallinskoe shosse, 66, kv. 180; Jury V. Petrov, prospekt Kosmonavtov, 50, korpus 4, kv. 24; Izrail A. Ptakul, Pulkovskaya ulitsa, 17, kv. 158; Vladimir P. Chernyavsky, Pulkovskaya ulitsa, 17, kv. 185; Aron B. Shapiro, ulitsa Basseinaya, 53, kv. 71, and Gennady V. Shkoda, Bukharestskaya ulitsa, 39, korpus 3, kv. 38, all of Leningrad, U.S.S.R.

Filed Feb. 28, 1977, Ser. No. 772,472

Int. Cl.[2] H02K *3/46*

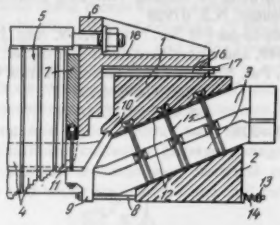
U.S. Cl. 310—260 **6 Claims**

1. In a stator of an electric machine having a winding having end connectors, a core made up of magnetic circuit stacks and having grooves wherein said winding is placed, means for axial clamping of said magnetic circuit stacks mounted on the end surface of said core and including clamp boards and thrust pins, a device for securing said end connectors of said winding comprising:

an outer ring and an inner conical ring each made of an insulating material, said end connectors of said winding being arranged between said rings, said outer ring being connected with said clamp board to move axially with respect to said clamp board for securing said end connectors;

a plurality of rods axially arranged and mounted on said inner conical ring for axial clamping of said inner conical ring;

a plurality of supports, for attachment of said inner conical ring to said outer conical ring, arranged at the exit of said winding from said grooves, a first end of each support



being pivotally connected with said axially arranged rod, a second end of each support pivotally resting on an end surface of said outer conical ring facing said core; and

a plurality of rods radially arranged at an end portion of said core, a first end of each rod being pivotally connected with said means for axially clamping, a second end of said rod being connected with said supports, said radially arranged rods and said supports being capable of withstanding axial loads.

4,126,800

SURFACE ELASTIC WAVE DEVICE USING SIDE LOBES

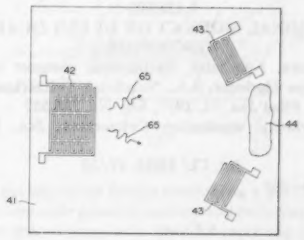
Showko Shiokawa, Yokohama; Takaaki Kusakabe, Tokyo; Toyosaka Moriizumi, Tokyo, and Tsutomu Yasuda, Tokyo, all of Japan, assignors to Toko, Inc., Tokyo, Japan

Filed May 25, 1977, Ser. No. 800,627

Claims priority, application Japan, Sep. 30, 1976, 51-117738; Sep. 30, 1976, 51-131746[U]; Sep. 30, 1976, 51-131747[U]

Int. Cl.[2] H01L *41/10*

U.S. Cl. 310—313 **6 Claims**



1. A surface elastic wave device comprising a base plate of a piezo-electric material, input electrode means provided on said base plate for exciting surface elastic wave, and output electrode means provided on said base plate for responding to said surface elastic wave, said input electrode means comprising a plurality of interdigital comb-like electrodes each including an equal number of pairs of interdigital fingers and arranged in parallel with each other with a predetermined spacing therebetween in the longitudinal direction of said interdigital fingers and with a predetermined width, said comb-like electrodes further including a common main lead portion and one or more sub lead portions connected with said main lead portion, said interdigital fingers being attached in the form of branches to said sub lead portions and arranged in interdigital relationship with each other and said main lead portion, whereby a surface elastic wave having a frequency different from the center frequency depending on the spacing between said interdigital

fingers is permitted to propagate in a direction from the propagating direction of the surface elastic wave having the center frequency.

4,126,801

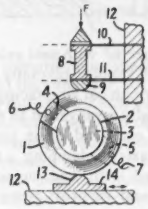
MOVEABLE SEAT FOR CRYSTAL IN AN OSCILLATING CRYSTAL TRANSDUCER SYSTEMS

James P. Corbett, 50 Rolling Hill Dr., Chatham Township, Morris County, N.J. 07928

Continuation-in-part of Ser. No. 499,489, Aug. 22, 1974, Pat. No. 4,020,448, and a continuation-in-part of Ser. No. 699,451, Jul. 1, 1976, Pat. No. 4,067,241. This application Oct. 20, 1976, Ser. No. 734,191

Int. Cl.[2] H01L *41/10*

U.S. Cl. 310—328 9 Claims



1. A force transducer comprising:

a plate-shaped crystal having a peripheral edge with a curved portion, and

at least one seating member which engages the curved portion of the peripheral edge of the crystal and has a convex surface curved in the direction opposite to that of the peripheral edge curved portion providing a contact region which is more limited in length along the length of the peripheral edge than the contact region provided by a flat seating member.

4,126,802

TORSIONAL MODE CT OR DT CUT QUARTZ RESONATOR

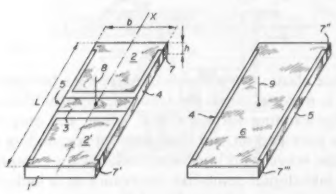
Jean Hermann, Neuchatel, Switzerland, assignor to Centre Electronique Horloger, S.A., Neuchatel, Switzerland

Filed Jan. 11, 1977, Ser. No. 758,557

Claims priority, application Switzerland, Jan. 16, 1976, 486/76

Int. Cl.[2] H01L *41/10*

U.S. Cl. 310—361 7 Claims



1. A piezoelectric resonator comprising at least one quartz plate or bar having the shape of a rectangular parallelepiped, vibrating torsionally about its longitudinal axis, wherein the quartz plate is a DT- or CT-cut plate the length L of which, extending along the electrical axis X of the crystal, the width *b* of which extending along the Z'-axis, and the thickness *h* of which, extending along the Y'-axis, are linked by the relations

$$1 < b/h < 10, \quad b < L$$

4,126,803

X-RAY TUBE AND APPARATUS INCLUDING AN X-RAY TUBE

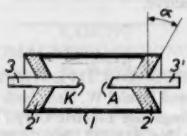
Dietrich Bader; Engelbert Berger; Dieter Ohnemüller, and Sieghard Reiprich, all of Berlin, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Oct. 7, 1975, Ser. No. 620,499

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1974, 2448497

Int. Cl.[2] H01J *35/011*

U.S. Cl. 313—55 17 Claims



1. In an X-ray tube including a closed vacuum envelope, an anode and a cathode within said vacuum envelope and high voltage leads for said anode and said cathode disposed at and extending through the respective end surfaces of said envelope; the improvement wherein said envelope comprises a metal cylindrical wall member and a pair of end members fastened to said wall member with each of said end members having an outer surface which forms a respective one of said end surfaces of said envelope, at least one of said members being an annular ceramic member whose outer periphery is fastened to said cylindrical wall member in a vacuum tight manner and through whose central opening pass one of said high voltage leads in a vacuum tight manner, so that the insulating path between the associated high voltage lead and said metal wall member extends in a predominantly radial direction, and said outer surface of said annular ceramic member forms an angle equal to or less than 45° with a plane perpendicular to the longitudinal axis of said X-ray tube.

4,126,804

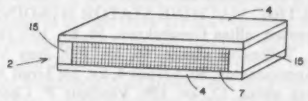
STRIP MICROCHANNEL ELECTRON MULTIPLIER ARRAY SUPPORT STRUCTURE

Adolf R. Asam, Daleville, and John T. Balkwill, Blue Ridge, both of Va., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Division of Ser. No. 625,432, Oct. 24, 1975, Pat. No. 4,021,216. This application Jan. 12, 1977, Ser. No. 758,741

Int. Cl.[2] H01J *43/22, 43/24*

U.S. Cl. 313—105 CM 3 Claims



1. A strip microchannel array, comprising:

a plurality of hollow square glass tubes, the internal surface of which is electron emissive, said tubes fused together to form a square glass electron multiplier means;

a plurality of individual square glass electron multiplier means fused together in a linear array to form an elongated composite rectangle; and

support means for holding said individual square electron multiplier means in a fixed position relative to each other to form the strip micro-channel array,

said support means including a continuous first strip of material fused to one side of each said square electron multiplier means, a second continuous strip of material fused to an opposite side of each of said square electron multiplier means, a first substantially rectangular solid glass member

fused at one end of the array to each of said first and second strips of material and to at least one of said square electron multiplier means and a second substantially rectangular solid glass member fused at the other end of the array to each of said first and second strips of material and to at least one of said square electron multiplier means at said other end of the array.

4,126,805

X-RAY TUBES

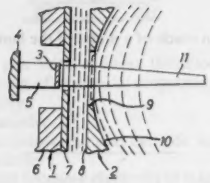
Robert P. Randall, Uxbridge, England, assignor to EMI Limited, Hayes, England

Filed Oct. 12, 1976, Ser. No. 731,428

Claims priority, application United Kingdom, Oct. 18, 1975, 42865/75; Oct. 22, 1975, 43447/75

Int. Cl.[2] H01J *35/00*

U.S. Cl. 313—57 **13 Claims**



1. An X-ray tube having a cathode comprising a plate member formed so that irregularities in the electron-emitting surface thereof do not exceed one micron in amplitude, means for generating an extraction field for withdrawing electrons from said member in substantially a single direction, an X-ray emissive target member, and means for focussing said electrons on a region of said target member which is of area substantially less than the area of said plate member.

4,126,806

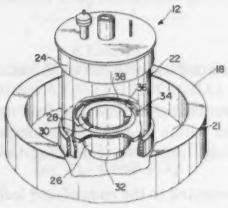
INTENSE ION BEAM PRODUCING REFLEX TRIODE

Christos A. Kapetanakos, Bethesda, and Jeffry Golden, Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 26, 1977, Ser. No. 836,822

Int. Cl.[2] H01J *23/08, 27/00;* **H05H** *1/00*

U.S. Cl. 313—155 **9 Claims**



1. A reflex triode receiving an electrical pulse from a pulse generator for producing an ion beam comprising:

chamber means, made of an electrically conducting material connected to said pulse generator and enclosing said reflex triode to maintain a vacuum;

cylindrical cathode means, made of an electrical conductor, for emitting electrons;

cylindrical shaped cathode shank means of electrically conducting material for supporting said cathode means, said cathode shank means positioned inside of said chamber means and being at the same potential as said chamber means;

anode means having a support made of a conducting material and a thin film means supported by said support, said thin film means, approximately facing and spaced from said cathode means, for providing a plasma as a source of ions and for causing accumulation of reflexing electrons near the anode means to provide an enhanced ion flow, said film means being supported in such a manner that substantially only the film means is placed in the path of reflexing electrons in the triode; and

anode stalk means shaped cylindrically of a conducting material and positioned inside of and closely spaced from said cathode shank means so that a sufficiently low inductance results that efficient coupling of electrical energy from said pulse generator to said reflex triode occurs, said stalk means being approximately equal in axial length to said cathode shank means, one end of said anode stalk means connected to said pulse generator and the other end supporting said anode means, said anode stalk means carrying sufficient current to generate a magnetic field to prevent electron emission and electrical current flow between said anode stalk means and said cathode shank means.

4,126,807

GAS DISCHARGE DISPLAY DEVICE CONTAINING SOURCE OF LANTHANUM SERIES MATERIAL IN DIELECTRIC LAYER OF ENVELOPE STRUCTURE

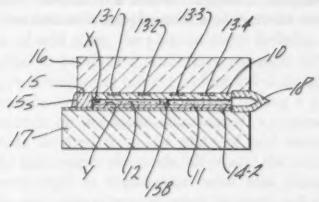
Donald K. Wedding; Michael E. Fein, both of Toledo; Roger E. Ernsthausen, Luckey, and Bernard W. Byrum, Jr., Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 417,961, Nov. 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 300,784, Oct. 25, 1972, abandoned, which is a division of Ser. No. 249,207, May 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 173,294, Aug. 19, 1971, abandoned. This application Oct. 24, 1975, Ser. No. 625,401

The portion of the term of this patent subsequent to Nov. 21, 1995, has been disclaimed.

Int. Cl.[2] H01J *61/30, 61/35*

U.S. Cl. 313—188 **69 Claims**



1. In a gas discharge device comprising a gas chamber containing an ionizable gaseous medium and including at least two electrodes spaced from each other for receiving said ionizable gaseous medium therebetween, at least one of the electrodes being insulated from the gaseous medium by a dielectric member; the improvement wherein at least one dielectric member contains a source of at least one Lanthanide Series rare earth.

4,126,808

HIGH VOLTAGE TWO STAGE TRIGGERED VACUUM GAP

Joseph A. Rich, Schenectady, N.Y., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Sep. 2, 1977, Ser. No. 830,211

Int. Cl.[2] H01J *21/20*

U.S. Cl. 313—198 **5 Claims**

1. A two stage triggered vacuum gap device, comprising

a sealed enclosure,

a mid plate separating said sealed enclosure into first and second chambers,

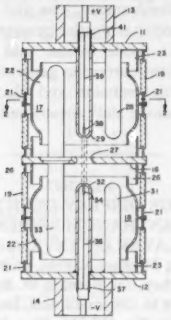
said mid plate having a centrally disposed aperture,

an end plate defining the end of said sealed enclosure in each of said first and second chamber,

an array of end plate electrodes mounted in and extending from each of said end plates toward said mid plate,

an array of mid plate electrodes mounted on said mid plate and extending therefrom toward each of said end plates,

said end plate electrodes and mid plate electrodes being spaced and arranged whereby ones in said array of end plate electrodes and array of mid plate electrodes lie in spaced side by side relation within each of said first and second chambers,



said array of end plate electrodes each including a centrally disposed electrode extending toward said centrally disposed aperture and terminating adjacent thereto,

and a plasma trigger mounted in the tip of one of said centrally disposed electrodes adjacent said centrally disposed aperture,

whereby a trigger signal applied to said plasma trigger when a high voltage is connected between a said array of electrodes in said first chamber and said array of electrodes in said second chamber causes substantially simultaneous high arc current flow through said first and second chambers.

4,126,809

GAS DISCHARGE DISPLAY PANEL WITH LANTHANIDE OR ACTINIDE FAMILY OXIDE

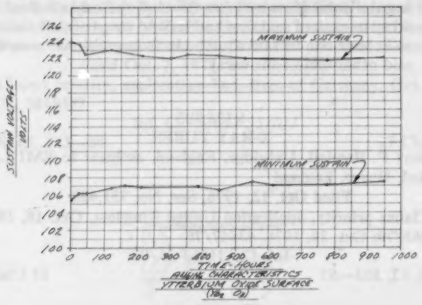
Donald K. Wedding, Toledo; Roger E. Ernsthausen, Luckey; Bernard W. Byrum, Jr., and Michael E. Fein, both of Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 556,777, Mar. 10, 1975, abandoned, and Ser. No. 571,902, Apr. 24, 1975, abandoned, said Ser. No. 556,777, is a continuation-in-part of Ser. No. 417,961, Nov. 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 300,784, Oct. 25, 1972, abandoned, which is a division of Ser. No. 249,207, May 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 173,294, Aug. 19, 1971, abandoned, said Ser. No. 571,902, is a continuation-in-part of Ser. No. 299,226, Oct. 20, 1972, abandoned, which is a division of Ser. No. 173,251, Aug. 19, 1971, abandoned. This application May 27, 1975, Ser. No. 581,064

Int. Cl.[2] H01J *61/30*

U.S. Cl. 313—221 **12 Claims**

1. A gas discharge display panel comprising two insulating slabs which are sealed along their peripheries, in order to form a sealed enclosure between their opposing faces, said enclosure being filled with ionizable gas, and two crossed networks of orthogonal electrodes arranged onto the opposing faces of said slabs, said opposing faces being covered with a layer of material containing an oxide of a metal of the lanthanide or actinide families.



4,126,810

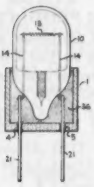
CERAMIC BASE FOR GLASS HALOGEN LAMPS

Charles W. Cox, Willoughby, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 691,500, Jun. 1, 1976, abandoned. This application Nov. 3, 1977, Ser. No. 848,280

Int. Cl.[2] H01J *5/48, 5/50*

U.S. Cl. 313—318 **8 Claims**



1. A subminiature glass halogen incandescent lamp comprising:

a subminiature hard glass envelope having a sealed end;

an atmosphere within said envelope comprising a halide;

refractory metal lead wires extending through said sealed end;

a filament connected to the ends of said lead wires contained within said envelope;

conductive wires joined one each to said lead wires at the ends extending from the sealed end of said envelope;

a ceramic base having an inside diameter greater than the outside diameter of said envelope, said ceramic base surrounding the sealed end of said envelope and the joint between said conductive wires and the respective lead wires, said conductive wires extending from said base, said filament being located at a predetermined position with respect to said base; and

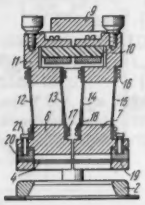
an adhesive filling at least the ends of said base to enclose the volume between said base and said envelope thereby securely holding said envelope and filament in said predetermined position and protecting said joint from mechanical stress and corrosion.

4,126,811

ELECTRON GUN WITH LINEAR THERMIONIC CATHODE FOR ELECTRON-BEAM HEATING

Boris A. Movchan, ulitsa Darvina, 7, kv. 7; Viktor A. Timashov, Vozdukhoflotsky prospekt, 5, kv. 10, and Nikolai V. Chaika, ulitsa Kikvidze, 28, kv. 20, all of Kiev, U.S.S.R.

Filed Jun. 30, 1977, Ser. No. 806,706
Int. Cl.[2] H01J 29/46, 29/48
U.S. Cl. 313—453 7 Claims



1. An electron gun with a linear thermionic cathode for electron-beam heating of materials, comprising:

a cathode assembly;

an accelerating anode;

an insulator interconnecting said cathode assembly and said accelerating anode;

a cathode-adjacent focusing electrode in said cathode assembly having two portions separated by a gap;

a linear thermionic cathode in said cathode assembly having an emitting surface, part of said emitting surface facing said accelerating anode,

the rest of said emitting surface being separated by a gap from said focusing electrode;

a housing of said cathode assembly having an insulator;

leads secured on said insulator of said housing;

a pair of flat current-conducting springs of said cathode assembly having ends connected to said leads and to opposite end surfaces of said portions of said cathode-adjacent focusing electrode, respectively;

a pair of flat springs of said cathode assembly having ends connected to other end surfaces of said portions of said cathode-adjacent focusing electrode and to said insulator of said housing, respectively, the pairs of said flat springs and of said flat current-conducting springs connected to said portions of said focusing electrode deflecting towards each other; and

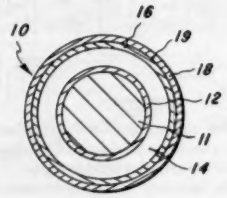
cathode holders arranged on said end surfaces of said portions to which said pairs of flat springs are connected.

4,126,812

SPHERICAL LIGHT EMITTING DIODE ELEMENT AND CHARACTER DISPLAY WITH INTEGRAL REFLECTOR

Gene F. Wakefield, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1976, Ser. No. 752,389
Int. Cl.[2] G09F 9/32
U.S. Cl. 313—500 10 Claims



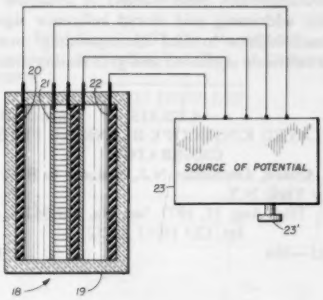
1. An LED array comprising an insulating support member having two major surfaces and a plurality of openings communicating between said major surfaces, a plurality of generally spherical semiconductor diode elements, said elements each having a subsurface p-n junction and being of sufficiently large diameter to prevent their passing completely through said openings, each of said diode elements being disposed partially within one of said openings from a first side of said opening, means adjacent a first one of said major surfaces of said member providing electrical connection to said diode elements on a first side of said p-n junction and means adjacent the other of said major surfaces of said member providing electrical connection to said diode elements on the other side of said p-n juncture.

4,126,813

DIRECT VIEW DEVICE

Richard K. Orthuber, Sepulveda, Calif., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 9, 1969, Ser. No. 815,526
Int. Cl.[2] H01J 31/48, 43/06
U.S. Cl. 315—11 9 Claims



1. An electron discharge device comprising: an evacuated envelope; a channel-type electron multiplier in said envelope, said multiplier including a dielectric plate having holes therethrough; first means to supply primary electrons to said holes on one side of said plate, the plate surfaces defining said holes being adapted to produce a secondary emission ratio greater than unity, said multiplier having a conductive input electrode on said one side thereof, said multiplier having a conductive output electrode on the other side thereof, a conductive control electrode isolated from the plate of said multiplier and adjacent the said output electrode, all of said electrodes having holes therethrough in registration with said plate holes to provide free and open communication through said plate holes; second means to receive the electron output of said multiplier; and a source of potential to maintain said electrodes at different DC potentials, said source maintaining said output electrode at a potential more positive than said input electrode and at a potential more positive than said control electrode.

4,126,814

ELECTRON GUN CONTROL SYSTEM

Frank J. Marlowe, Kingston, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 9, 1976, Ser. No. 749,178
Int. Cl.[2] H01J 29/52
U.S. Cl. 315—307 9 Claims

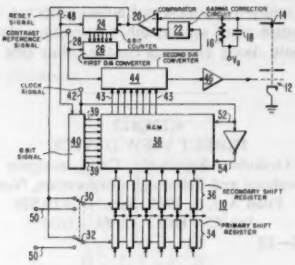
9. A system for controlling an electron gun of a display device, said device comprising an image screen and a plurality of electron guns, each of which includes a biasing grid and is adapted to scan a different portion of said screen and wherein the electron beam current varies from gun to gun for a given grid bias, said system comprising:

means for generating a plurality of reference signals;

means for biasing the grid of said gun to be controlled with said reference signals;

means for sensing the beam current of said gun to determine which of said reference signals produce predetermined beam currents;

means for storing those of said reference signals which produce said predetermined beam currents; and



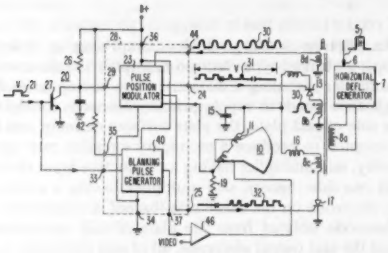
means for addressing said stored reference signals with brightness signals to feed corresponding ones of said stored reference signals to said grid biasing means.

4,126,815

DELAYED KINESCOPE BLANKING PULSE GENERATOR

Adel A. A. Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1977, Ser. No. 829,562
Int. Cl.[2] H01J *29/52*
U.S. Cl. 315—384 **15 Claims**



1. A delayed transition blanking pulse generator for a television kinescope deflection apparatus synchronized from a source of synchronizing signals initiating but preceding a blanking pulse transition, comprising:

first current source means of a first polarity;

capacitance means coupled to said first current source means for accepting first charging current therefrom to form an integrated signal;

controllable second current source means coupled to said capacitance means for producing a second charging current therein of an opposite polarity and greater amplitude than that of said first current source;

first coupling means for coupling a control electrode of said controllable second current source to the source of synchronizing signals;

voltage-sensitive switch means coupled to said capacitance means for generating a blanking signal pulse component of a first polarity at an output terminal when said integrated signal exceeds a predetermined value; and

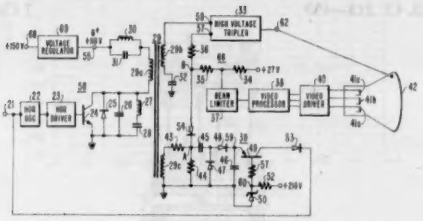
current-sensitive switch means coupled to said second current source and to said output terminal and responsive to generation of said second charging current to produce a blanking signal pulse component of said first polarity.

4,126,816

HIGH VOLTAGE PROTECTION CIRCUIT

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 13, 1977, Ser. No. 796,669
Int. Cl.[2] H01J *29/70*
U.S. Cl. 315—411 **11 Claims**



1. High voltage protection apparatus for a display system comprising:

a high voltage transformer responsive to a first alternating voltage for providing a high voltage accelerating potential for beam current;

a first winding coupled to said high voltage transformer for providing a second alternating voltage representative of said high voltage accelerating potential;

a protection circuit coupled to said first winding and responsive to said second alternating voltage for providing a disabling signal for disabling normal operation of said display system when said high voltage accelerating potential exceeds first predetermined values;

beam current sensing means responsive to said beam current for providing at a first terminal a first voltage representative of the magnitude of said beam current; and

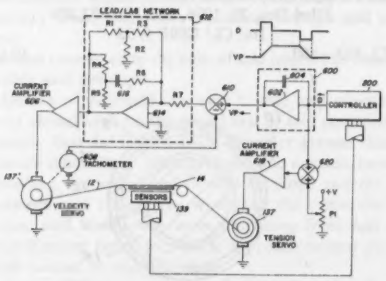
first means coupled to said first terminal and said first winding for clamping a winding terminal of said first winding to said first voltage during at least a portion of an interval of said second alternating voltage when said beam current equals or goes beyond a predetermined amount for changing the magnitudes of said first predetermined values.

4,126,817

SERVO SYSTEM FOR MAINTAINING CONSTANT TENSION ON A WEB

Guillermo F. Luzio, Plano, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 16, 1977, Ser. No. 769,064
Int. Cl.[2] B65H *59/38, 77/00;* H02P *5/46, 7/68*
U.S. Cl. 318—7 **12 Claims**

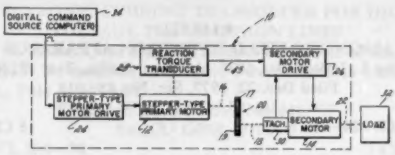


1. Apparatus for maintaining constant tension on a web during movement thereof, said apparatus comprising:

supply means coupled to one end of the web for supplying said web during movement;

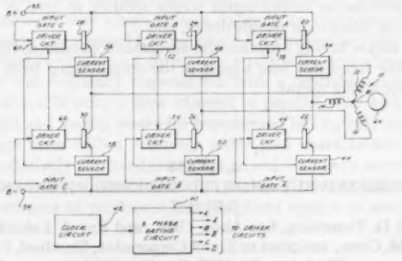
take up means coupled to the other end of the web for receiving said web from the supply means;
means for applying an energizing signal to the take up means for causing movement of said web; and
means for applying the derivative of that signal exclusively to the supply means to thereby maintain constant tension on the web during movement between said supply and take up means.

4,126,818
HYBRID STEPPING MOTOR UNIT
William W. Taylor, 5300 Hamilton Ave., Apt. 103, Cincinnati, Ohio 45224
Continuation-in-part of Ser. No. 709,217, Jul. 27, 1976, abandoned. This application Jun. 16, 1977, Ser. No. 807,034
Int. Cl.[2] H02N *29/02*
U.S. Cl. 318—46 **10 Claims**



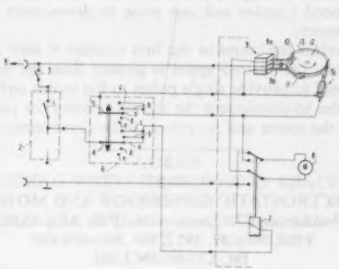
1. A hybrid stepping motor unit, comprising:
a stepper-type primary motor;
a secondary motor;
said stepper-type primary motor and said secondary motor being connected in driving relation to a common output shaft;
means responsive to reaction torque on said stepper-type primary motor for producing a control signal;
said secondary motor being responsive to said control signal to augment torque produced by said stepper-type primary motor to drive said common output shaft.

4,126,819
INTERLOCK CIRCUIT FOR COMPLEMENTARY ELECTRONIC SWITCHES
Richard E. Stobbe, Greenfield, and Michael R. Cessrz, Mequon, both of Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.
Filed Jul. 1, 1977, Ser. No. 812,134
Int. Cl.[2] H02M *3/24*
U.S. Cl. 318—810 **7 Claims**



1. In a complementary switching circuit including a load element, a voltage source having two opposed terminals, a first electronic switch element coupled in series between one terminal of said load element and one terminal of said voltage source, a second electronic switch element coupled in series between said one terminal of said load element and the other terminal of said voltage source, and each electronic switch element having a control input for turning the corresponding switch element off and on, an interlock circuit for preventing both electronic switch elements from being turned on at the same time, comprising:
a first current sensor coupled in series with said first electronic switch element;
means coupling the output of said first current sensor to the control input of said second electronic switch element to switch said second electronic switch element off when said first electronic switch element is conducting current above a predetermined level;
a second current sensor coupled in series with said second electronic switch element; and
means coupling the output of said second current sensor to the control input of said first electronic switch element to switch said first electronic switch element off when said second electronic switch element is conducting current above a predetermined level.

4,126,820
LOWERABLE ANTENNA FOR RADIO RECEIVERS
Bernt O. Hörmann, and Egon Frey, both of Sindelfingen, Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany
Filed Sep. 6, 1977, Ser. No. 830,665
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1976, 2641071
Int. Cl.[2] H02H *7/08*
U.S. Cl. 318—468 **19 Claims**



1. An antenna operable to be extended and retracted for radio receivers, comprising actuating means for the antenna driven by an electric motor reversible in its direction of rotation, and control circuit means for the electric motor including an on-off switch operable to close the energizing circuit for the motor when turning on the receiver, limit switch means, and cam means moving in proportion to the movement of the antenna for actuating the limit switch means, characterized by a further cam means cooperating with a further switching contact means and operable to open the same above a predetermined extended length of the antenna, and manual switch means for the further selective extension or retraction of the antenna.

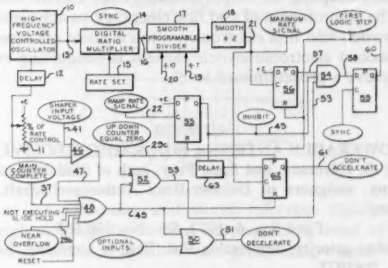
4,126,821
STEPPING MOTOR CONTROL CIRCUIT
Lee E. Cannon, Bozeman, Mont., assignor to Dana Corporation, Toledo, Ohio
Filed Oct. 13, 1976, Ser. No. 731,867
Int. Cl.[2] G05B *19/40*
U.S. Cl. 318—696 **11 Claims**

1. A speed rate control for driving a stepping motor in response to pulses over a predetermined distance expressed in steps comprising:
(a) a first counting means for initially storing the number of steps to be taken;
(b) second counting means comprising an up/down counter;
(c) maximum speed signal input providing a signal related to the maximum desired speed of driving the motor;
(d) acceleration speed signal generating means providing an

output signal which relates to the instantaneous desired speed of the motor and varies with the count in the second counter;

(e) means comparing the acceleration speed signal with the maximum speed signal and generating control signals according to the following:

(i) when the count in the first counter is above one and the desired speed is below the maximum speed to provide single pulses to the motor and to up-count the second counter and two pulses for each pulse to the motor to downcount the first counter;



(ii) when the count in the first counter is exactly one to provide a single pulse to the motor, no pulses to the second counter and one pulse to downcount the first counter;

(iii) when the count in the first counter is zero and also when the desired speed is greater than the maximum speed to provide single pulses to the motor and a single pulse to downcount the second counter for each pulse to the motor and no pulses to the first counter.

4,126,822

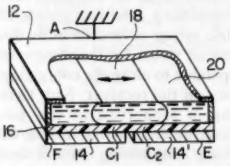
ELECTROSTATIC GENERATOR AND MOTOR

Sven E. Wahlstrom, 570 Jackson Dr., Palo Alto, Calif. 94303

Filed May 27, 1977, Ser. No. 801,242

Int. Cl.[2] H02N *1/00*

U.S. Cl. 322—2 A **29 Claims**



1. Apparatus for electrostatically generating power by converting mechanical motion into electrical energy, comprising:

(a) a container for fluid;

(b) two variable capacitors formed in the container, said capacitors each having a separate conductor and sharing a common dielectric member and a common movable conductor, said common conductor is separated from the separate conductors by the dielectric member, moves between the separate conductors in response to mechanical motion, and thereby inversely alternates the capacitance between the two variable capacitors;

(c) an output power increasing, electrically resistive fluid held within the container and in contact with the common conductor and the common dielectric member; said fluid having a breakdown voltage substantially greater than atmospheric air;

(d) circuit means connected to the common conductor and the separate conductors for transferring charge between the variable capacitors and having two output junctions for transmitting electrostatically generated power.

28. Method for electrostatically generating power by converting mechanical motion into electrical energy, comprising the steps of:

(a) triboelectrically charging first and second variable capacitors with a quantity of electrical charge;

(b) generating an electrostatic force field in the first capacitor;

(c) moving a body against the electrostatic force field in the first capacitor so that charge is transferred through a circuit from the first capacitor to the second capacitor;

(d) generating an electrostatic force field in the second capacitor; and

(e) moving the body against the electrostatic force field in the second capacitor so that charge is transferred from the second capacitor back to the first capacitor through the circuit, whereby said transfer of charge between the variable capacitors is the electrostatically generated p[illegible]wer.

4,126,823

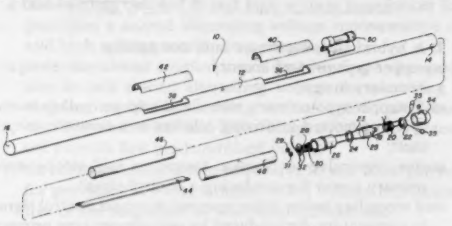
MAGNETIC FIELD DETECTION APPARATUS

Murphy L. Dalton, Jr., 6035 Aberdeen, Dallas, Tex. 75230

Filed Dec. 22, 1977, Ser. No. 856,013

Int. Cl.[2] G01R *33/08*

U.S. Cl. 324—0.5 E **15 Claims**



1. In a magnetic field detector having a pair of magnetically polarizable liquid bodies carried in spaced-apart relation, each having a magnetic probing coil wound therearound, with means connecting the coils in series and including timer means alternately applying current to the coils to polarize the liquid bodies to generate free precession signals therein and removing the polarizing current during a preset listening interval intervening polarizing intervals, the combination which comprises:

(a) a high gain signal channel tuned to the frequency of said free precession signals generated in said coils for amplifying a signal that is the sum of said free precession signals,

(b) means to rectify said sum signal at a selected bias level to produce an output signal which reduces to zero as said free precession signals decay, and

(c) means having a mechanical movement operable to follow low frequency beat signals in the output signal from said rectifying means.

4,126,824

PROGRESSIVELY SHORTED TAPERED RESISTANCE DEVICE

David D. Thornburg, Los Altos, Calif., and Roy J. Lahr, Fairfield, Conn., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 21, 1977, Ser. No. 789,392

Int. Cl.[2] G01R *27/02*

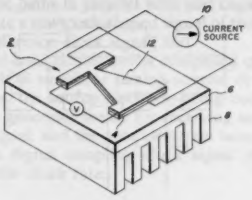
U.S. Cl. 324—62 **15 Claims**

1. A tapered resistor device comprising:

a tapered, electrically resistive element which develops a non-uniform temperature profile on electrical energization, and

a body of a material which undergoes an irreversible resistance change when heated above a threshold temperature, said body of material being in operative association with said

tapered resistive element whereby heat produced by said tapered resistive element is operable to change the resistance of at least a portion of said body of material heated above said threshold temperature.

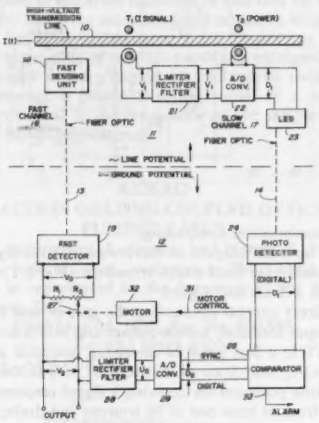


4,126,825

ELECTRONIC CURRENT TRANSDUCER FOR HIGH VOLTAGE TRANSMISSION LINES

John M. Houston, and Harry R. Summerhayes, both of Schenectady, N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 25, 1977, Ser. No. 844,785
Int. Cl.[2] G01R *31/00*
U.S. Cl. 324—96 **7 Claims**



1. Electronic current transformer apparatus for measuring the line current of a high voltage transmission line comprising: an analog fast channel having means for transmitting line current data in continuous form with a relatively wide dynamic range and frequency response but with a relatively unstable gain characteristic; a slow channel in parallel with said fast channel and having means for transmitting line current data in discrete form with a relatively stable gain characteristic but with relatively narrow dynamic range and frequency response, and means for calibrating said fast channel data with said slow channel data to produce a gain stabilized replica of said line current.

4,126,826

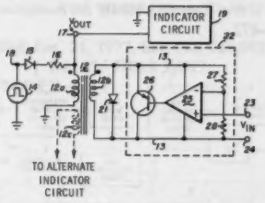
MEASUREMENT SYSTEM SIGNAL ISOLATION

Robert C. Dobkin, San Mateo, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 19, 1977, Ser. No. 834,860
Int. Cl.[2] G01R *1/20*; G01K *7/20*
U.S. Cl. 324—127 **9 Claims**

1. Measurement means for sensing at a first location a condition at a second location wherein said first and second locations may be electrically isolated, said measurement means comprising:

means for developing a constant voltage of a magnitude related to said condition in response to current flow in one direction and for developing a state of high conduction in response to current flow in a direction opposite to said one direction;



a transformer having a secondary winding coupled to said means for developing and a primary winding;

means for coupling a source of pulsed signal energy to said primary winding; and

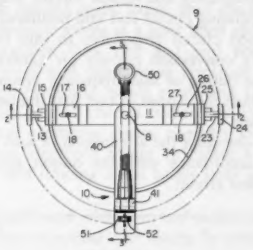
means coupled to said transformer for determining the peak voltage across said means for developing a constant voltage when said source of pulsed signal energy causes current to flow in said one direction.

4,126,827

STEERING WHEEL MICROPHONE BRACKET ASSEMBLY

Maurice A. Negrini, 25 Quimby Ave., Woburn, Mass. 01801

Filed Jun. 6, 1977, Ser. No. 803,973
Int. Cl.[2] H04B *1/38*
U.S. Cl. 325—16 **6 Claims**

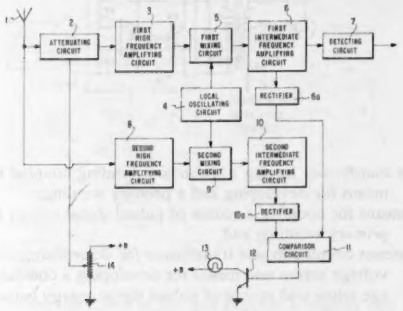


1. A steering wheel microphone bracket assembly comprising a mounting bracket provided with a projection having a socket, a plurality of arcuate collars, means adjustably mounting said collars to said mounting bracket, a plurality of electrical switches, means fastening said electrical switches to said arcuate collars, a pendulum arm having a bearing, means pivotally mounting said bearing to said projection, a bracket having a goose neck, means pivotally connecting said bracket with said goose neck to said pendulum arm, a microphone connected to said goose neck, a microphone plug, means removably securing said microphone plug in said socket, electrical means connecting said microphone to said microphone plug and additional electrical means adapted to connect said microphone plug and said plurality of electric switches to a transmitter receiver.

4,126,828
INTERMODULATION ANTIINTERFERENCE DEVICE FOR SUPERHETERODYNE RECEIVER

Morio Kumagai, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1977, Ser. No. 819,044
Claims priority, application Japan, Jul. 31, 1976, 51-91577; Jul. 31, 1976, 51-91578
Int. Cl.[2] H04B 1/10
U.S. Cl. 325—472 11 Claims



1. An intermodulation antiinterference circuit for a superheterodyne receiver having a receiving antenna comprising

a first high frequency amplifying circuit responsive to the receiving antenna;

a local oscillating circuit;

a first frequency conversion circuit responsive to said first high frequency amplifying circuit and said local oscillating circuit;

a variable attenuation circuit connected to said first high frequency amplifying circuit between said receiving antenna and said first frequency conversion circuit;

a nonlinear circuit responsive to said receiving antenna having less linearity than said first high frequency amplifying circuit;

a second frequency conversion circuit responsive to said local oscillating circuit and said nonlinear circuit;

a comparison circuit responsive to said first and second frequency conversion circuits for generating an output when the output of said frequency conversion circuit is greater than the output of said first frequency conversion circuit; and

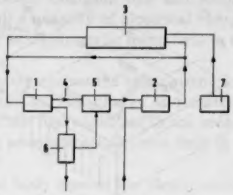
means for changing the attenuation of said attenuating circuit in accordance with the output generated by said comparison circuit.

4,126,829
ELECTRONIC ECHO APPARATUS

Robert R. Laupman, Wijchen, Netherlands, assignor to Novanex Automation N.V., Wijchen, Netherlands

Filed Jun. 27, 1977, Ser. No. 810,104
Claims priority, application Netherlands, Jun. 30, 1976, 7607182
Int. Cl.[2] H03F 1/36
U.S. Cl. 330—110 1 Claim

1. An electronic echo apparatus comprising an input amplifier, an output amplifier, a transmission channel connecting said input amplifier to said output amplifier, a delay device connected in parallel to said channel, and a feedback path connected between said input amplifier and said output amplifier, said feedback path including a control means, and means connected to the output of said output amplifier, for measuring the output signal of said output amplifier, comparing said output signal to a predetermined threshold value and, when said output signal reaches said threshold value, supplying a

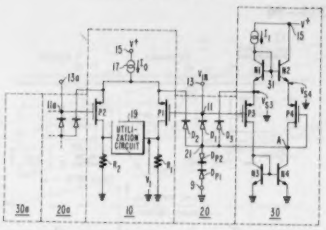


control signal to said control means for terminating the feedback.

4,126,830
LOW LEAKAGE GATE PROTECTION CIRCUIT

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 27, 1977, Ser. No. 837,280
Int. Cl.[2] H03F 3/16
U.S. Cl. 330—277 5 Claims



5. The combination comprising:

an input terminal adapted to receive an external input signal;

an insulated-gate field-effect transistor (IGFET) having a source, a drain and a gate;

means direct current connecting the gate of said IGFET to said input terminal; means connecting said source of said IGFET to a first point of operating potential and means connecting said drain of said IGFET to a second point of operating potential for deriving a signal responsive to the input from at least one of its sources and drain;

a protective network for said IGFET comprising a diode connected between the gate of said IGFET and a first node; and

means for reducing the flow of leakage currents across said diode comprising a non-inverting voltage follower amplifier, independent of said IGFET, having an input and an output; means direct current connecting said amplifier input to said input terminal and means direct current connecting said amplifier output to said first node.

4,126,831
ELECTRONIC PHASE DETECTOR CIRCUIT

Michael J. Cochran, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 27, 1977, Ser. No. 791,264
Int. Cl.[2] H03B 3/04
U.S. Cl. 331—8 3 Claims

1. A phase detector circuit comprising:

(a) sawtooth signal generator means including:

(i) a resistive means,

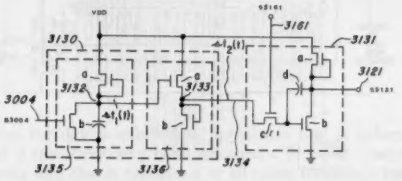
(ii) a capacitive means serially coupled to said resistive means, and

(iii) a switching means coupled in parallel with said capacitive means, said switching means having an input cou-

pled to receive a reference clock signal with said switch being responsive to the voltage levels of said reference clock signal for selectively providing high and low impedence paths in parallel with said capacitive means to generate a sawtooth-shaped signal of the same period as said reference clock signal; and

(b) sample-and-hold circuit means comprised of:

(i) a first MOS transistor having source, drain and gate electrodes, the source electrode being coupled to said sawtooth generator means for receiving said sawtooth-shaped signal, and the gate electrode being coupled to receive a digital sampling clock signal of selectively controllable clock rate;



(ii) an MOS load transistor,

(iii) an MOS source transistor serially coupled to said load transistor, said source transistor having a gate electrode coupled to the drain electrode of said first MOS transistor for receiving samples of said sawtooth-shaped signal and having a Miller capacitance for holding the most current sample of said sawtooth-shaped signal, and

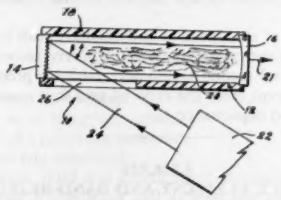
(iv) output means coupled to said source transistor for generating a phase detection signal of a magnitude proportional to the magnitude of the samples held by said Miller capacitance.

4,126,832

DIFFRACTION GRATING COUPLED OPTICALLY PUMPED LASER

Howard R. Schlossberg, Lexington, and Harold R. Fetterman, Waltham, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 26, 1977, Ser. No. 800,985
Int. Cl.[2] H01S *3/094*
U.S. Cl. 331—94.5 C **8 Claims**



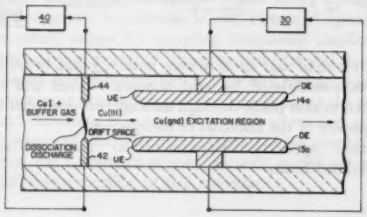
1. An optically pumped laser system for producing an output of submillimeter wavelength radiation comprising a submillimeter laser cavity defined by a housing, a partially transmitting reflective surface located at one end of said housing and a diffraction grating located at the other end of said housing in optical alignment with said partially transmitting reflective surface, means formed in said housing in optical alignment with said grating for allowing pump radiation to pass therethrough, means in optical alignment with said grating for producing said pump radiation, said diffraction grating being oriented with respect to said pump radiation producing means so as to provide first order reflection of said pump radiation along the axis of said submillimeter laser cavity and zero order reflection of said submillimeter wavelength radiation within said submillimeter laser cavity and a lasing medium located within said submillimeter laser cavity whereby said pump radiation optically pumps said lasing medium in said laser cavity.

4,126,833

HIGH REPETITION RATE METAL HALIDE LASER

Richard L. Hundstad, and Lelland A. C. Weaver, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 21, 1977, Ser. No. 761,045
Int. Cl.[2] H01S *3/097*
U.S. Cl. 331—94.5 PE **9 Claims**



1. In a metal halide laser system, the combination of:

a laser housing containing a metal halide gas laser medium,

flow means for establishing a predetermined flow rate of said metal halide gas laser medium through said housing,

dissociation electrode means positioned at a first location in the flow of said metal halide gas laser medium in said laser housing,

excitation electrode means positioned at a second location downstream from said dissociation electrode means at a predetermined distance from said dissociation electrode means, said predetermined flow rate and said predetermined distance defining a drift time of the flow of said metal halide laser gas medium between said dissociation electrode means and said excitation electrode means,

a first electrical excitation means operably connected to said dissociation electrode means to produce molecular dissociation of the flowing metal halide laser gas medium and generate metastable atoms at a laser level above ground, said predetermined flow rate and said predetermined distance between said dissociation electrode means and said excitation electrode means producing relaxation of said atoms to a ground state at said second location,

second electrical excitation means operably connected to said excitation electrode means to create a population inversion in said flowing metal halide laser gas medium, and

optical means positioned relative to said excitation electrode means to define an optical laser cavity for extracting laser output light.

4,126,834

BULK WAVE BRAGG CELL

Richard A. Coppock, San Jose, Calif., assignor to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Jun. 27, 1977, Ser. No. 810,180
Int. Cl.[2] H01S *3/10*; G02F *1/32*
U.S. Cl. 332—7.51 **1 Claim**

1. In combination

an acousto-optic Bragg cell device comprising

a transparent piezoelectric body having a smooth surface, and

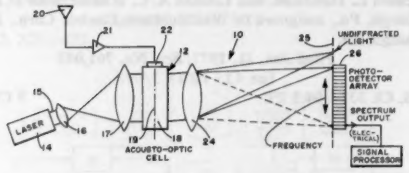
a single-layer interdigital transducer (IDT) conductive array deposited on said surface,

a source of microwave energy connected to said array

whereby to launch bulk acoustic waves into said body transversely of said surface,

said bulk waves comprising shear waves propagating in a plane extending transversely of said surface,

laser apparatus having an output beam directed through said body transversely of the direction of propagation of and in



said plane of said shear waves whereby said beam is diffraction-modulated by said acoustic waves and is deflected in said plane through an angle proportional to the frequency of the microwave energy, and

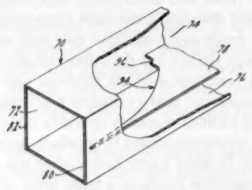
utilization apparatus responsive to said diffraction-modulated beam.

4,126,835

BALANCED PHASE SEPTUM POLARIZER

Harry J. Gould, Cupertino, Calif., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 20, 1977, Ser. No. 808,206
Int. Cl.[2] H01P *1/16*
U.S. Cl. 333—21 A **10 Claims**



1. A septum polarizer for converting a linearly polarized microwave signal to a circularly polarized signal and vice versa, said septum polarizer comprising:

a first waveguide, said first waveguide being capable of supporting propagation of a circularly polarized microwave signal;

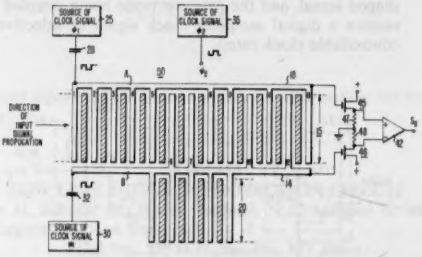
a septum dividing said first waveguide into second and third waveguides each of which is capable of supporting propagation of a linearly polarized transverse electric field microwave signal, said septum extending from one side to the opposite side of said first waveguide, said septum having an edge that begins at a first point, said first point being located on said one side of said first waveguide, said septum edge terminating at a second point, said second point being located on said opposite side of said first waveguide, said first and second points being spaced from one another relative to the direction of propagation of microwave signals in said waveguides, and said septum edge having at least one step-shaped portion and at least one concave curved portion, said septum edge causing an inflection point to be produced in the phase angle vs. frequency function of the orthogonal electric field components of the circularly polarized microwave signal whose propagation is capable of being supported by said first waveguide.

4,126,836

BALANCED CAPACITANCE CHARGE TRANSFER DEVICE

James E. Carnes, North Brunswick, and Robert H. Dawson, Griggstown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 30, 1977, Ser. No. 782,753
Int. Cl.[2] H03H *7/28;* G11C *19/28;* H01L *27/10;* H03K *17/60*
U.S. Cl. 333—70 T **12 Claims**



1. A semiconductor electrical charge transfer device comprising:

a first plurality of spaced conductive charge transfer electrodes insulatingly disposed on a major surface of a semiconductor substrate and defining quiescent and signal charge storage locations along a signal transfer path, said first plurality comprising a first set of conductive areas coupled to a first conductor and having an associated first capacitance developed in response to charge underlying said first set of conductive areas, and a second set of conductive areas coupled to a second conductor and having an associated second capacitance developed in response to charge underlying said second set of conductive areas;

a second plurality of a predetermined number of spaced conductive electrodes insulatingly disposed on said major surface of said semiconductor substrate and defining quiescent charge storage locations of an auxiliary path adjacent to said signal transfer path, each electrode of said second plurality having an associated capacitance developed in response to charge underlying each of said electrodes;

means for conductively coupling said second plurality of electrodes to one of said first and second conductors; and wherein

said number of electrodes of said auxiliary path is chosen so that quiescent capacitances respectively associated with said first and second conductors exhibit a predetermined ratio different from the ratio of said first capacitance to said second capacitance.

4,126,837

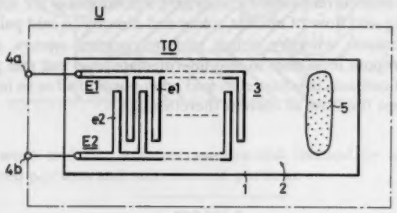
IMPEDANCE ELEMENT AND BAND-REJECTION FILTER USING THE SAME

Yahei Koyamada, Tokorozawa, and Fujio Ishihara, Tokyo, both of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Continuation of Ser. No. 565,351, Apr. 7, 1975, abandoned. This application Sep. 15, 1976, Ser. No. 723,502
Claims priority, application Japan, Jul. 1, 1974, 49-75221; Jul. 1, 1974, 49-75222; Jul. 1, 1974, 49-75223
Int. Cl.[2] H03H *9/04, 9/20, 9/26, 13/00*
U.S. Cl. 333—72 **12 Claims**

1. An impedance element which is formed with an electro-elastic surface wave transducing device composed of a substrate for the propagation of an elastic surface wave and an electro-elastic surface wave transducer disposed on said substrate for converting an electrical signal into an elastic surface wave or vice versa and in which said electro-elastic surface

wave transducer has electrodes of interdigital conductor structure, and terminals connected to said electrodes characterized in that the number of fingers of the interdigital conductors of said electrodes is large enough and their spacing small enough that the direct capacitive impedance there between is less than the inductive impedance coupled to said capacitive impedance by the resonant mechanical motion of said elastic surface



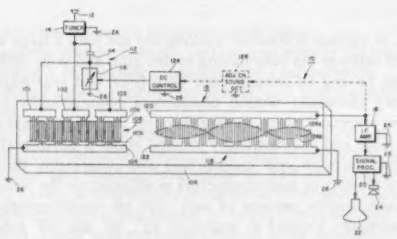
whereby the device exhibits an impedance that is inductive only in a first frequency band between a first and a second frequency and that is capacitive in all other frequency bands and that said impedance is higher in a second frequency band centered on said second frequency than in the other frequency bands, and said first frequency is a little higher than the resonant frequency of electro-elastic surface wave transducer.

4,126,838

UNIFORM SURFACE ACOUSTIC WAVE TRANSDUCER CONFIGURATION HAVING IMPROVED FREQUENCY SELECTIVITY

Joseph H. McCusker, and Stuart S. Perlman, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,421
Int. Cl.[2] H03H *9/04, 9/26;* H01L *41/10*
U.S. Cl. 333—72 **18 Claims**



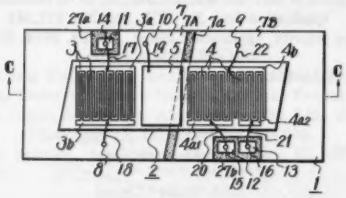
1. Apparatus comprising:
a source of an electrical signal;
a source of a reference potential;
a piezoelectric substrate;
first, second, third and fourth comb-shaped elements, each including a conductor and at least one electrode means extending from said conductor, mounted on one surface of said substrate;
said first and said fourth comb-shaped elements having respective electrode means thereof interleaved in alternated relationship to form a first end portion of a transducer;
said third and one of said second and fourth comb-shaped elements having respective electrode means thereof interleaved in alternated relationship to form a second end portion of said transducer;
said second and fourth comb-shaped elements having respective electrode means thereof interleaved in alternated relationship to form a center portion of said transducer between said first and second end portions;
each pair of alternated electrode means in said transducer having a region wherein the two electrode means in the pair overlap each other, the amount of overlap for each pair of alternated electrode means being substantially equal;
each pair of alternated electrode means in said transducer having its location within said transducer determined by the location of a center position substantially midway between the electrode means in the pair, the spacings between the center positions between adjacent pairs of alternated electrode means being substantially equal throughout said transducer;
means for coupling said fourth comb-shaped element to said source of said reference potential;
means for coupling said electrical signal to said second comb-shaped element, said center portion of said transducer generating an acoustic signal along the surface of said substrate in response to said electrical signal;
attenuation means for coupling attenuated amplitude portions of said electrical signal to said first and third comb-shaped elements, said first and second end portions of said transducer generating acoustic signals along the surface of said substrate in response to said attenuated amplitude portions of said electrical signal having amplitudes less than the amplitude of said acoustic signal generated by said center portion of said transducer.

4,126,839

SURFACE ACOUSTIC WAVE APPARATUS

Hiroshi Yamanoi, Hiratsuka, and Tomosaburo Kitamura, Kawasaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 15, 1977, Ser. No. 768,781
Claims priority, application Japan, Feb. 26, 1976, 51-20348
Int. Cl.[2] H03H *9/26, 9/04, 9/30;* H01L *41/10*
U.S. Cl. 333—72 **8 Claims**



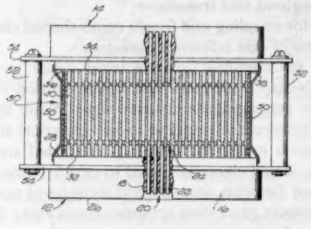
1. A surface acoustic wave apparatus comprising:
(a) a header made of insulating material;
(b) an earth pattern made of conductive material and coated on almost all the upper surface of said header;
(c) a surface acoustic wave element comprising a substrate having a major surface thereof, an input transducer provided on a first portion of said major surface, an output transducer provided on a second portion of said major surface, said surface acoustic wave element being mounted on said header, the surface opposite to said major surface of said substrate being in contact with said earth pattern;
(d) a first earth pin provided through said header at a side of said first portion of said surface acoustic wave element;
(e) a second earth pin provided through said header at a side of said second portion of said surface acoustic wave element; and
(f) a cut-out portion formed through said earth pattern separating said earth pattern between said first and second earth pins.

4,126,840

FILTER CONNECTOR

Gerald J. Selvin, Birmingham, Mich., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 14, 1977, Ser. No. 776,829
Int. Cl.[2] H03H *7/04;* H01G *4/40;* H01R *33/80*
U.S. Cl. 333—79 **18 Claims**



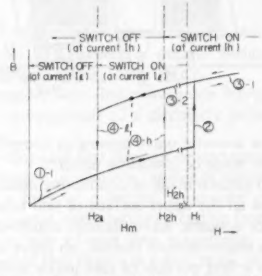
1. A filter connector comprising:
an electrical connector housing having at least one row of contacts therein, each said contact having a forward contacting portion adapted to engage a contact of a mating electrical connector and a rear termination portion;
a monolithic capacitor extending along one side of said row of contacts;
said monolithic capacitor comprising a dielectric substrate having a plurality of parallel, spaced live electrodes on an outer face thereof facing said contacts and aligned with said contacts, said contacts being electrically connected to said live electrodes; and
at least one second electrode means on said substrate in capacitive relation to said live electrodes.

4,126,841

OVERCURRENT SWITCH

Chiaki Maeno, Suzaka, Japan, assignor to Fujitsu Limited, Japan

Continuation of Ser. No. 600,139, Jul. 30, 1975, abandoned. This application Jun. 30, 1977, Ser. No. 811,681
Claims priority, application Japan, Jul. 31, 1974, 49-87619
Int. Cl.[2] H01H *51/00*
U.S. Cl. 335—154 **8 Claims**



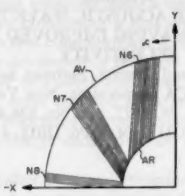
1. In an overcurrent switch serially connected in a circuit for interrupting the flow of current therethrough when an overcurrent is detected, the switch comprising:
a pair of electrically conductive contacts actuable to an open position by application of a magnetic field of intensity equal to or less than a predetermined drop-out level and actuable to a closed position by application of a magnetic field of intensity equal to or greater than a predetermined pull-in level; and
first means for initially applying to said pair of contacts a magnetic field of intensity equal to at least said predetermined pull-in level so as to actuate said pair of contacts to said closed position, and for subsequently reducing the intensity of said applied magnetic field to an intensity intermediate between said drop-out and said pull-in levels so as to maintain said pair of contacts in said closed position;
the improvement wherein said pair of electrically conductive contacts are selected so as to have a drop-out level which increases substantially with increasing flow of current therethrough;
said overcurrent switch comprising second means for applying said flow of current solely and directly to said pair of contacts whereby, when said overcurrent occurs, said dropout level rises to said intermediate level and said pair of contacts is actuated to said open position so as to interrupt the flow of current therethrough.

4,126,842

TOROIDAL DEFLECTION WINDING FOR CATHODE RAY TUBE HAVING IN-LINE GUNS, WIDE DEFLECTION ANGLE AND LARGE SCREEN

Roger Barouh, Acheres, and Alex Nissen, Paris, both of France, assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jul. 27, 1977, Ser. No. 819,287
Claims priority, application France, Aug. 12, 1976, 76 24595
Int. Cl.[2] H01F *5/00*
U.S. Cl. 335—213 **7 Claims**



1. A vertical deflection winding for use with a large screen, color cathode ray tube having in-line guns and wide deflection angle, having an annular core with front and rear edges and having toroidally wound conductors symmetrically located about a vertical plane passing through the longitudinal axis of said core and symmetrically located about a horizontal plane passing through said longitudinal axis comprising three primary clusters of said conductors positioned on the front edge of each quarter section of said core on predetermined arcs substantially located at angles of 10°, 50° and 90° measured from said vertical plane, said primary clusters having respective conductor numerical ratios of substantially 48, 25 and 7, the conductors of said clusters being substantially uniformly distributed on said rear edge of said core over a range of substantially 30° to 90° measured from said vertical plane.

4,126,843

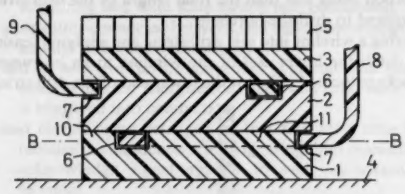
ATTACHMENT OF INSULATING COLLARS

Wolfgang Lampe, Ludvika, Sweden, assignor to Asea AB, Vasteras, Sweden

Filed Mar. 10, 1977, Ser. No. 776,455
Claims priority, application Sweden, Mar. 15, 1976, 7603261
Int. Cl.[2] H01F *15/04, 27/30*
U.S. Cl. 336—84 C **5 Claims**

1. In an electrical transformer having a core yoke and winding ends with yoke insulation arranged therebetween, said yoke insulation comprising: a plurality of spacers arranged in tiered relationship with one another, the confronting surfaces of at least two adjacent spacers including at least one recessed

portion and at least one elevated portion, a plurality of insulating collars, a portion of at least one collar being arranged



between said two adjacent spacers and retained by said recessed portions and said elevated portions.

4,126,844

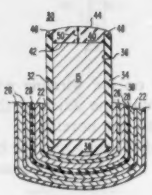
ELECTRICAL INDUCTIVE APPARATUS

Robert H. Hollister; Jerry W. Crockett, both of South Boston; Harold R. Younger, Jr., Halifax, and Garland B. Ricketts, South Boston, all of Va., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 15, 1977, Ser. No. 824,594

Int. Cl.[2] H01F *27/30*

U.S. Cl. 336—198 **4 Claims**



1. Electrical inductive apparatus comprising:

a magnetic core including a vertically-extending leg portion having a rectangular cross-sectional configuration;

a winding tube assembly disposed around said leg portion; and

an electrical winding disposed in inductive relation with said magnetic core and forming a plurality of concentric turns around said winding tube assembly, said electrical winding having a substantially rectangular cross-sectional configuration and being subject to radial forces incident to a short circuit, said electrical winding being substantially in registry with the entire exterior surface of said winding tube assembly;

said winding tube assembly including first, second, third, and fourth members, each constructed of solid, electrically insulating material which is substantially non-compressible and non-shrinkable, said first, second, third and fourth members each having an inner exterior surface disposed facing said leg portion of said core and an outer exterior surface disposed facing said electrical winding, said first and second members having a rectangular cross-sectional configuration, said third and fourth members having a plano-convex cross-sectional configuration wherein said outer surface of each member is curved outwardly relative to said flat inner surface to provide a solid support structure for said electrical winding adjacent said third and fourth members which resists movement of said electrical winding due to said radial forces incident to a short circuit, and means for interlocking each of said first and second members with both of said third and fourth members to provide a solid support structure for said electrical winding that retains its shape during the assembly and operation of said electrical inductive apparatus.

4,126,845

TEMPERATURE RESPONSIVE CURRENT INTERRUPTER

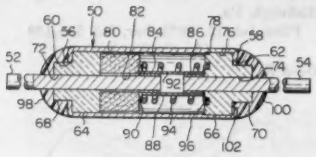
Nobuyuki Iimori; Wasuke Koseki, and Atsuo Ono, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Apr. 13, 1977, Ser. No. 787,203

Claims priority, application Japan, Apr. 15, 1976, 51-47443[U]

Int. Cl.[2] H01H *37/76*

U.S. Cl. 337—408 **29 Claims**



1. A temperature responsive current interrupter, comprising a thermally conductive, hollow casing, two elongated conductors which extend into the casing through insulating means secured to the casing and which have respective inner axial end portions which are spaced apart from each other within the casing, two electrically conductive, normally rigid, thermally fusible elements each having a predetermined melting point and mounted on each of said inner axial end portions of said conductors, an electrically conductive connector element interconnecting the conductive fusible elements, an electrically non-conductive, normally rigid, thermally fusible element which has a predetermined melting point higher than said melting point of each of said conductive fusible elements and which is in surface-to-surface contact with said connector element, the connector element being movable toward a position separate from at least one of said conductors in the absence of the non-conductive fusible element in a rigid state, and resilient biasing means urging said conductor element against said non-conductive fusible element and toward said position thereof.

4,126,846

VARIABLE RESISTOR

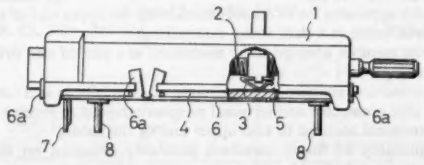
Teietsu Ueno; Kazuo Sato; Kohji Sugawara; Shuji Takamura; Masami Tanaka; Yukihiko Nomura, and Isao Tsujioka, all of Tohda, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Aug. 12, 1977, Ser. No. 824,096

Claims priority, application Japan, Aug. 12, 1976, 51-107966[U]

Int. Cl.[2] H01C *1/02*

U.S. Cl. 338—184 **6 Claims**



1. In a variable resistor comprising an insulating base plate having a resistance element thereon, means including a moveable element engaging said resistance element for varying the resistance between input and output terminals of the resistor and a housing secured to said base plate, the improvement wherein said housing includes opposing side walls each having a longitudinal groove extending along a lower portion thereof, a forward end portion having a stop in the same plane as said groove and latching portions space rearwardly from said stop, and said base plate having rearwardly facing step portions

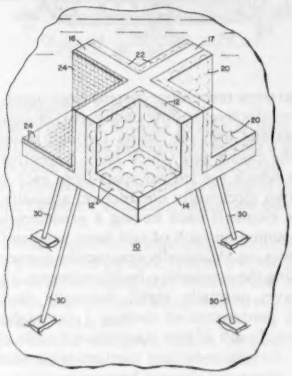
spaced back from a leading end of the base plate and adapted to engaged by said latching portions whereby the base plate and housing can be secured together simply by inserting the leading end of said base plate into the rearward ends of said grooves and sliding the base plate forwardly until said leading end abuts said stop and said step portions are engaged by said latching portions.

4,126,847

PASSIVE ACOUSTIC NAVIGATION AID

Robert Etkins, Crofton, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 15, 1975, Ser. No. 596,138
Int. Cl.[2] G10K *11/00*
U.S. Cl. 340—5 R **9 Claims**



1. Passive acoustic navigation device comprising
(A) a first set of frequency selective elements resonant at a first predetermined frequency arranged over three substantially mutually perpendicular surfaces to form a corner reflector;
(B) a plurality of other similarly disposed sets of said elements resonant at respective other predetermined frequencies;
(C) said sets being respectively arranged in four quadrants.

4,126,848

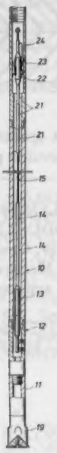
DRILL STRING TELEMETER SYSTEM

Early B. Denison, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 23, 1976, Ser. No. 753,768
Int. Cl.[2] G01V *1/40*; E21B *23/00*
U.S. Cl. 340—18 LD **15 Claims**

8. An apparatus for releasably anchoring the upper end of an armored cable in a drill string comprising:
a sub member adapted to be assembled as a part of said drill string;
a cylindrical support member mounted coaxially in said sub;
a cable connector and terminal member adapted to receive a terminal secured to said upper end of the cable;
a plurality of finger members pivotably mounted on the upper end of said cable connector and terminal member; and
biasing means mounted on said cable connector and terminal member and disposed to bias said finger members toward a retracted position that permits said cable connector and terminal member to pass through said cylindrical support member, said fingers being movable to an extended position where they engage the upper end of said cylindrical member and prevent said cable connector terminal member from passing downwardly through said cylindrical support member.

15. A method for drilling a borehole and telemetering information from the bottom of the borehole to the surface while drilling, said method comprising:
extending a portion of the drill string into the borehole, said portion being less than the total length of the drill string required to drill the borehole;
lowering a wireline into said drill string and applying tension to latch the lower end of the wireline to an instrument package located adjacent the lower end of the drill string;



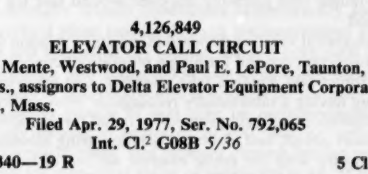
retaining the tension on the wireline while anchoring the upper end of the wireline adjacent the top of the drill string extending into said borehole;
extending additional drill string into the borehole, said additional drill string including an electro-magnetic transducer; and
connecting the upper end of the wireline to the electro-magnetic transducer to complete the telemetry circuit to the top of the borehole.

4,126,849

ELEVATOR CALL CIRCUIT

Alfred C. Mente, Westwood, and Paul E. LePore, Taunton, both of Mass., assignors to Delta Elevator Equipment Corporation, Allston, Mass.

Filed Apr. 29, 1977, Ser. No. 792,065
Int. Cl.[2] G08B *5/36*
U.S. Cl. 340—19 R **5 Claims**



1. A call button replacement circuit for use in an elevator control system designed to employ call devices of the touch tube type, comprising
a high voltage supply terminal,
a call-acknowledge terminal,
a controllable solid state switch having a control electrode and a controlled circuit connected in series between said high voltage terminal and said call-acknowledge terminal,
a temperature sensitive disconnect connected in circuit between said high voltage supply terminal and said solid

state switch for disabling said call button circuit in the presence of temperature substantially above ambient,

a manually operable switch connected in circuit between said high voltage terminal and said control electrode for triggering said solid state switch into conduction,

a capacitor connected between said call-acknowledge terminal and said control electrode,

and an indicator device connected in circuit with said solid state switch for energization when said solid state switch is triggered into conduction,

said circuit being arranged so that said solid state switch remains in conduction after triggering until released by an acknowledge signal applied to said call-acknowledge terminal.

4,126,850

AUTOMATIC RELEASE MECHANISM FOR A TETHER

Julie K. Randolph, Antigua Island, assignor to RCA Corporation, New York, N.Y.

Filed Jul. 8, 1977, Ser. No. 813,859

Int. Cl.[2] G08G *5/00*

U.S. Cl. 340—28 **7 Claims**

5. Apparatus for automatically disengaging an aerial warning indicator secured to a cable during the retraction of said cable comprising:

passive cam means including a conical member disposed about said cable secured adjacent the earth in a relatively fixed spaced position with respect to said cable, and

clamp means including said indicator and clamp jaw means releasably secured to said cable, said clamp jaw means including first and second jaw means for urging said jaws in a cable clamp position, and

cam follower means for engaging said passive cam means during said retraction and automatically separating and releasing said jaws from the cable during the retraction, said follower means including a pair of members, one of each said jaw, forming a funnel-shaped follower for engaging said conical member.

4,126,851

PROGRAMMABLE TELEVISION GAME SYSTEM

Joseph K. Okor, 516 Green St., Cambridge, Mass. 02139

Continuation-in-part of Ser. No. 627,960, Nov. 3, 1975, abandoned. This application Jan. 11, 1977, Ser. No. 758,414

Int. Cl.[2] G06K *15/20*

U.S. Cl. 340—324 AD **3 Claims**

1. A system for generating and controlling symbol-producing signals for display on the screen of a television receiver, comprising:

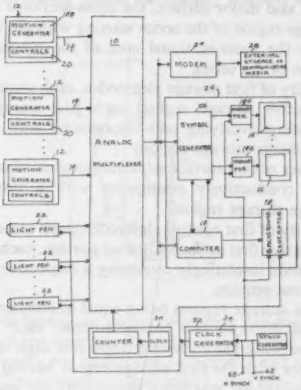
(a) a multiplexer,

(b) a plurality of manual control units operatively connected to said multiplexer for operation by individual players, and including symbol position and control means for generating and transmitting symbol position and control signals,

(c) a plurality of light pens operatively connected to said multiplexer for operation by individual players, each of said pens including light responsive means and pulse producing means responsive to said light responsive means,

(d) a display unit adapted to be located remotely from and responsive to a control unit, said display unit adapted to receive said symbol position and control signals from said control units,

(e) changeable memory means providing program instruction,



(f) a modem providing an interface between said memory means and said display unit,

(g) timing control means operatively connected to said multiplexer for cyclically scanning said multiplexer,

(h) said display unit including symbol generator means for generating symbols for display on said screen, modulator means connecting between said receiver and said symbol generator means responsive to said symbol generator means and said light pens for generating positional information, and computer means operatively connected to said symbol generator means, said background generator means and said multiplexer for controlling the operation thereof.

4,126,852

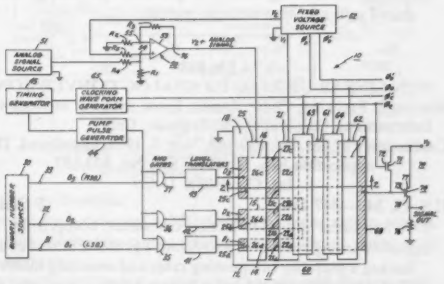
MULTIPLYING DIGITAL TO ANALOG CONVERTER

Richard D. Baertsch, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 15, 1977, Ser. No. 787,915

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 DA **5 Claims**



1. A multiplying digital to analog converter for providing a

sequence of samples in which each sample represents the product of a respective sample of an analog input signal and a respective binary number comprising:

means for providing a binary number having a plurality of digits,

means for providing an analog signal,

a substrate of semiconductor material having a major surface,

a plurality of first charge storage regions in said substrate adjacent said major surface, said first storage regions being consecutively arranged in a series according to the cross-sectional areas thereof as measured in a plane parallel to said major surface, the cross-sectional area of each storage region of the series starting with the second being twice the cross-sectional area of the preceding storage region of the series,

a plurality of first storage electrodes, each associated with a respective storage region, each first storage electrode insulating overlying and coextensive with a respective first charge storage region,

a plurality of first surface adjacent portions of said substrate, each conductively contiguous with a respective first charge storage region,

a plurality of first control electrodes, each associated with a respective first surface adjacent portion, each first control electrode insulatingly overlying a respective first surface adjacent portion,

said first storage regions being equal in number to the number of digits in said binary number, each first storage region being paired with a respective digit of said binary number with the first storage region having the smallest cross-sectional area being paired with the least significant digit and each successive first storage region of increased cross-sectional area being paired with a repsective successive digit of increased order,

means for applying a first storage voltage to said first storage electrodes to establish a first level surface potential in said first storage regions,

means for applying a first control voltage to said first control electrodes to establish a second level of surface potential in said first surface adjacent regions smaller in absolute magnitude than said first level of surface potential,

means for applying said analog signal to one of said plurality of first storage electrodes and said plurality of first control electrodes to vary one of said first and second levels of surface potential while maintaining the other of said plurality of first storage electrodes and said plurality of first control electrodes fixed in potential,

charge introduction means responsive to a "one" bit in each digit of said binary number to introduce a respective first quantity charge into respective first storage region, said first quantity of charge being proportional to the cross-sectional area of said first storage region and the difference of said first level of surface potential and said second level of surface potential,

means for combining said first quantities of charge introduced into said first storage regions.

4,126,853

NON-LINEAR DIGITAL-TO ANALOG CONVERSION

Marvin E. Frerking, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 629,169, Nov. 5, 1975, abandoned. This application Sep. 16, 1977, Ser. No. 833,857

Int. Cl.[2] H03K *13/20*

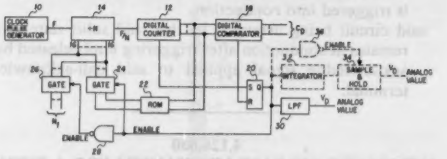
U.S. Cl. 340—347 DA **9 Claims**

1. A non-linear digital-to-analog converter, comprising:

digital counting means for providing a predetermined count, having a plurality of counting rates and counting intervals with the duration of each interval being variable and independent from that of the other intervals and the rate in each interval being determined by a control signal applied thereto, there being a different control signal for each one of said counting rates;

comparator means for providing a pulse until the count in said counting means reaches the digital value to be converted;

indicating means responsive to said comparator means for providing an output signal whose magnitude is proportional to the width of said pulse, and



control storage means for providing said control signals from the output of said digital counting means such that the output signal from said indicating means at some point during each counting interval corresponds to the desired equivalent analog value for the digital value of the count at that point and the control signal intermediate the termination of said pulse and the completion of said predetermined count always assumes the same value for affording a single fixed counting rate during that period.

4,126,854

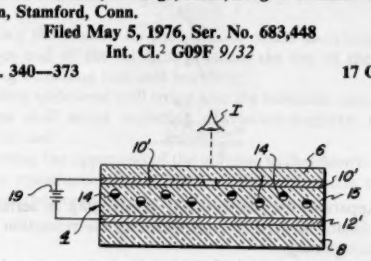
TWISTING BALL PANEL DISPLAY

Nicholas K. Sheridon, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 5, 1976, Ser. No. 683,448

Int. Cl.[2] G09F *9/32*

U.S. Cl. 340—373 **17 Claims**



1. An addressable display device comprising:

a light transparent body having a plurality of optically anisotropic particles contained within dielectric liquid-filled cavities thereof, each of said particles having at least two dissimilar surfaces of contrasting optical characteristics and different Zeta potentials, the dissimilar surfaces of said particles and the distribution of said particles in said dielectric liquid causing said particles to have an electrical anisotropy, and

addressing means for applying an electric field across selected portions of said body whereby the particles contained within said selected portions of said body will rotate in accordance with their electrical anisotropy to provide a display in accordance with their optical anisotropy.

4,126,855

ANNUNCIATOR READOUT UNIT

Erhard E. Alms, Lake Zurich, and James E. Mitchell, Algonquin, both of Ill., assignors to AFE Industries, Inc., Lake Zurich, Ill.

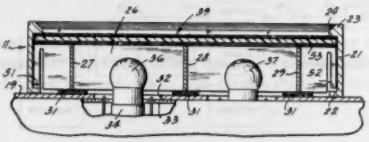
Continuation of Ser. No. 576,695, May 12, 1975. This application Nov. 29, 1976, Ser. No. 745,764

Int. Cl.[2] G08B *5/38*

U.S. Cl. 340—381 **7 Claims**

1. An annunciator panel comprising, a frame member, a grid

structure mounted in said frame member and defining a plurality of indicating cells and formed of a plurality of ribs which define said indicating cells and with edges which define a plane, a plurality of lights mounted in said cells with one light in each cell, a first sheet formed with light blocking areas and mounted so that said light blocking areas are aligned with the edges of said ribs, a relatively thick transparent second sheet mounted adjacent said first sheet, and a third sheet mounted



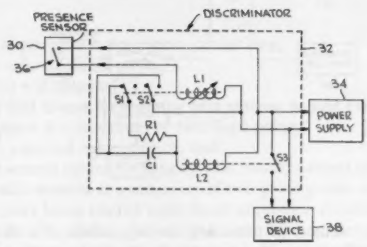
adjacent said second sheet and formed with light blocking area aligned with said edges of said ribs and said third sheet having printed material aligned over said indicating cells defined by said ribs, wherein said third sheet has areas which have different colors in different cells with one color in each cell overlying said printed material in said cells, and wherein said third sheet has a first dark opaque sheet which overlies said indicating cells such that said annunciator panel appears dark unless one of said lights is illuminated.

4,126,856

SCALES ANNUNCIATOR

Robert L. Gray, 426 W. Clifford St., Winchester, Va. 22601, and Kenneth D. Keller, Rte. 1, Toms Brook, Va. 22660, assignors to Robert L. Gray, Winchester and Kenneth D. Keller, Toms Brook, both of, Va.

Filed Apr. 18, 1977, Ser. No. 788,339
Int. Cl.[2] G08G *23/18;* G08B *21/00*
U.S. Cl. 340—529 **9 Claims**



1. An apparatus for announcing the presence of a desired object, said apparatus comprising:

sensor means, responsive to the weight of said desired object, for producing an output;

discriminator means, responsive to said sensor means output, for producing an output only when said sensor means output exists over a first predetermined time period; and

sensory means, responsive to said discriminator means output, for signaling the presence of said desired object.

4,126,857

PROBE-TYPE LIQUID DETECTOR

Frederick N. Lancia, Columbus, and Albert O. Kesterson, Worthington, both of Ohio, assignors to Liebert Corporation, Columbus, Ohio

Filed Jul. 11, 1977, Ser. No. 814,292
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—620 **16 Claims**

1. Apparatus for detecting the presence of liquid at a given location comprising;

a first housing mountable at positions remote from said given location;

alarm means mounted within said first housing and energizable to provide an output signal;

means within said housing for retaining a d.c. power supply;

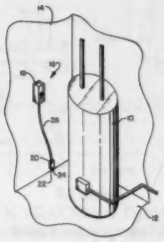
at least two spaced metal probes each said probe comprising;

a base component formed of a metal selected from the group consisting of aluminum, titanium, niobium and tantalum;

a noble metal layer intimately adhered to one surface of said base component;

an oxide of said select metal substantially covering, in situ, the remaining surface portions of said base component;

solid state switching means electrically coupled with said



probes and having an output switching condition when said probes are simultaneously immersed in said liquid;

a second housing for supporting said probes and said solid state switching means in substantially close adjacency and configured for encapsulatively sealing said switching means from the environment of said liquid means retained within said second housing for electrically coupling said noble metal layer of each said probe with said solid state switching means; and

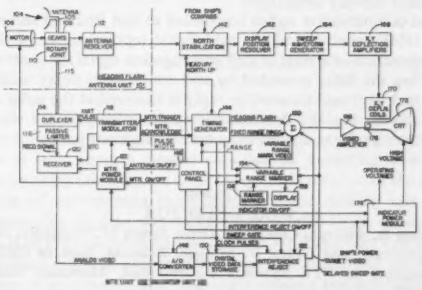
flexible cable means connected between said first and second housing means for asserting current from said power supply to said solid state switching means, and for effecting the energization of said alarm means in the presence of said output switching condition.

4,126,858

DISPLAY RANGE MARKER

Alan I. Wiener, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 3, 1977, Ser. No. 774,000
Int. Cl.[2] G01S *7/22*
U.S. Cl. 343—5 EM **8 Claims**



3. In combination:

means for producing a PPI display of radar return signals, said displaying means having a plurality of range scale settings;

means for producing a range mark upon said display; and

an operator actuable control for varying the position of said range mark upon said display, the amount of movement of

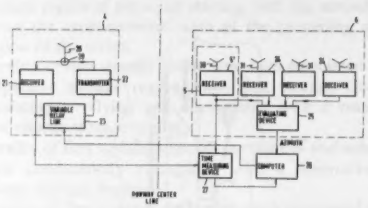
said range mark upon said display for a fixed unit of movement of said operator actuable control being independent of said range scale setting.

4,126,859

GROUND STATION FOR A ROUND-TRIP-PATH DISTANCE-MEASURING SYSTEM

Manfred Böhm, Stuttgart, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 28, 1977, Ser. No. 846,432
Int. Cl.[2] G01S 9/56
U.S. Cl. 343—5 LS **5 Claims**



1. A ground DME transponder station located to facilitate air-derived determination of distance to a runway touch-down point at a predetermined location along a runway centerline, comprising:

a first ground station subassembly comprising an antenna, a first DME receiver, a transmitter and a duplexer connecting said receiver and transmitter to said antenna for alternate reception and transmission, said first subassembly being located laterally with respect to said runway at a point spaced by a predetermined distance from said touchdown point;

controllable delay means within said first ground subassembly responsive to an externally supplied transmitter delay control signal, said delay means being connected from said first DME receiver to said transmitter to control the time of transmitter reply after reception of an interrogation signal by said receiver;

a second ground station subassembly comprising a second DME receiver and a colocated direction finder, said direction finder being responsive to said interrogation signal for generating a signal representative of the direction of arrival ϵ of said interrogation signal, said second subassembly being located laterally of said runway on the side opposite said first subassembly and spaced from said runway centerline by a second predetermined distance from said runway centerline;

and compensation means responsive to said first and second DME receivers and to said signal representative of the direction of arrival of said interrogation signal for controlling the delay provided by said controllable delay means such that said transmitter reply is received at the point of said air-derived determination substantially at the same time as if transmitted from said touchdown point.

4,126,860

WIRE DETECTOR

William B. Sullivan, Columbus, Ohio; James M. Tresidder, Jr., Sunnyvale, and Gabor V. Molnar, Belmont, both of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Feb. 6, 1970, Ser. No. 14,809
Int. Cl.[2] G01S 9/02
U.S. Cl. 343—5 NA **6 Claims**

1. Apparatus for detecting a wire in a medium, comprising

means for producing a pulse of broadband radio frequency electromagnetic wave energy,

means for transmitting said pulse into the medium,

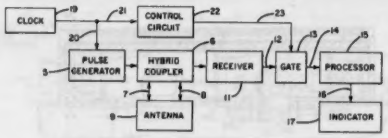
means for receiving electromagnetic wave signals from said medium,

means for detecting a concentration of energy in received signals at a ringing frequency comprising

an oscilltor producing a local oscillator signal,

a mixer combining received signals and a local oscillator signal for producing an intermediate frequency signal,

an indicator, and



means for coupling the intermediate frequency signal to said indicator, and

a source of sweep voltage,

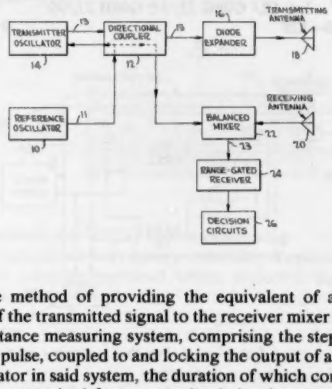
said oscillator being a voltage controlled oscillator responsive to the sweep voltage for producing a local oscillator signal having a frequency that is swept across a band of frequencies.

4,126,861

PULSE DOPPLER RANGING SYSTEM (U)

Joseph J. Witte, Silver Spring, Md., and Raymond H. Femenias, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 23, 1967, Ser. No. 626,658
Int. Cl.[2] G01S 7/36, 9/14; H03B 3/08
U.S. Cl. 343—13 R **6 Claims**



6. The method of providing the equivalent of a delayed sample of the transmitted signal to the receiver mixer in a pulse radar distance measuring system, comprising the steps of generating a pulse, coupled to and locking the output of a transmitter oscillator in said system, the duration of which corresponds to the time required for a transmitted signal to travel to and return from a target at a predetermined maximum range, and connecting said pulse to said receiver mixer.

4,126,862

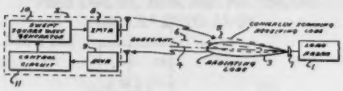
COUNTERMEASURE FOR LORO RADAR

Fred M. Simonaire, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 489,101, Sep. 20, 1965, abandoned. This application Apr. 23, 1968, Ser. No. 725,583
Int. Cl.[2] G01S 7/38
U.S. Cl. 343—18 E **3 Claims**

1. A countermeasure device for a tracking radar of the lobe-on-receive-only type comprising: means for radiating energy on the radar's frequency, means for amplitude modulating said radiated energy at a frequency that repeatedly sweeps at alternate slow and fast rates over a range of frequencies

including the unknown lobing frequency of the radar, means for receiving energy radiated by said radar, and control means responsive to an abrupt decrease in the intensity of the received energy to arrest the modulating frequency sweep and institute for a predetermined interval a reverse sweep of the modulating frequency at a rate slower than said slow rate.



4,126,863

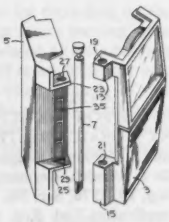
TWO PIECE PORTABLE RADIO CABINET HINGED ABOUT ANTENNA

John S. Kolwaite, Dewitt, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Aug. 29, 1977, Ser. No. 828,805

Int. Cl.[2] H01Q *1/24*

U.S. Cl. 343—702 **5 Claims**



1. A portable radio cabinet comprising:
(a) a first cabinet piece,
(b) a rod antenna,
(c) first means for securing said antenna to said first cabinet piece at a minimum of two fixed points,
(d) a second cabinet piece, and
(e) second means for hinging said second cabinet piece onto said antenna at a minimum of two pivot points, said pivot point being spaced apart so as to provice rotation of said second cabinet piece about said antenna and to resist rotation about other axes perpendicular to that of said antenna.

4,126,864

ICE SHIELD FOR MICRO-WAVE ANTENNA

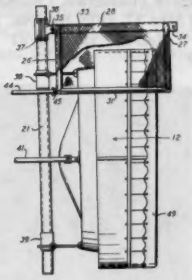
Ben R. Hopkins, 1869 Nirvana Ave., Chula Vista, Calif. 92011

Continuation of Ser. No. 709,914, Jul. 29, 1976, abandoned. This application Jan. 23, 1978, Ser. No. 871,193

Int. Cl.[2] H01Q *1/42*

U.S. Cl. 343—704 **4 Claims**

1. An ice shield for an antenna supported upon a tower of tubular steel and comprising a pair of spaced, arcuate tubular frame members, connector means between the arcuate frame members, a wind-permeable perforate cover over a portion of the interval between frames, said frames and said cover shrouding at least the upper portion of the antenna at an interval therefrom; support means joining the frame members to the tower, said support means including a horizontal support beam located at a top symmetrical position fixed to the frame members, means connecting the beam to the tower, and a pivot mount between the connecting means and the beam; and adjustable stabilizer ties connecting the frame members to the tower.



4,126,865

SATELLITE TRACKING DISH ANTENNA

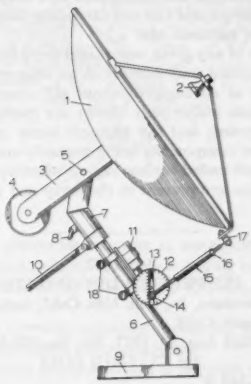
David W. Longhurst, Bournemouth, and Martin A. Weston, New Milton, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 11, 1976, Ser. No. 741,073

Claims priority, application United Kingdom, Nov. 11, 1975, 46604/75; Apr. 23, 1976, 16627/76

Int. Cl.[2] H01Q *3/03*

U.S. Cl. 343—766 **2 Claims**



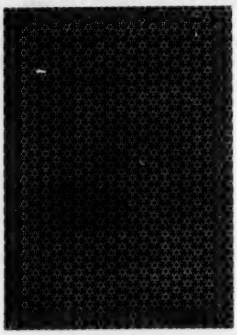
1. Satellite tracking apparatus for tracking a synchronous satellite comprising a directional antenna having a beam width of at least about a quarter of a degree, mounting means for supporting said antenna so as to constrain rotation of the direction of said antenna beam about a single rocking axis only, means for aligning said rocking axis parallel to the declination axis of the synchronous satellite and for fixing said axis in said aligned position, and rocking means for oscillating the direction of said beam about said single rocking axis approximately sinusoidally with a period of one sidereal day to follow only the changes in declination due to the inclination of the orbit of the satellite, said rocking means comprising a crank, a clock motor adapted to rotate said crank at a rate of one revolution per sidereal day, and a tie-rod connecting said crank and said antenna to impart oscillatory motion about said rocking axis to said antenna beam.

4,126,866

SPACE FILTER SURFACE

Edward L. Pelton, Columbus, Ohio, assignor to Ohio State University Research Foundation, Columbus, Ohio

Filed May 17, 1977, Ser. No. 797,797
Int. Cl.[2] H01Q *1/42*
U.S. Cl. 343—909 **13 Claims**



1. In a space filter of a variety incorporating a surface disposed array of recurrent filter components mutually arranged in a periodic pattern, the improvement comprising:

a surface incorporating a cluster of three discrete mutually spaced filter components, each said component comprising a pair of thin elements each extending from a terminal portion thereof to define linear portions, said linear portions being symmetrically disposed about, and at an angle of about 60°, with respect to an axis bisecting them;

means defining a reactive load connected with each said terminal portion and configured as a loop symmetrically disposed about said axis and extending outwardly between said linear portions; and

the said axis of any given one of said three filter components being disposed with respect to an adjacent other one of said axes at an angle of about 60° whereby said filter components within said cluster are mutually symmetrically disposed; and the adjacent linear portions of said three filter components being mutually spaced and defining an open ended surface region whereby all portions of said surface are present in the array and in a continuous fashion.

4,126,867

INK JET PRINTER DRIVING CIRCUIT

Richard G. Stevenson, Jr., Palo Alto, Calif., assignor to Silonics, Inc., Sunnyvale, Calif.

Filed Aug. 29, 1977, Ser. No. 828,960
Int. Cl.[2] G01D *15/16*
U.S. Cl. 346—140 R **8 Claims**

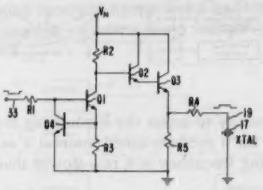
1. An ink jet printer capable of ejecting a drop of ink upon demand in response to a control pulse, comprising:

an ink chamber having an orifice through which said ink droplet is expelled,

a piezoelectric element cooperatively installed in conjunction with said chamber for suddenly reducing its volume to expel a droplet through said orifice upon being connected to a voltage source,

means receiving said control pulse for connecting said element to said voltage source for the duration of said control pulse, said connecting means including a three-terminal semi-conductor device connected to change between conductive and non-conductive states through two terminals in response to the control pulse being applied to a third control terminal, and

means connected between one of said two terminals and the control terminal of said switching device for applying to the control terminal a bias voltage level proportional at any instant to the level of current through said semi-conductor device between its said two terminals, thereby



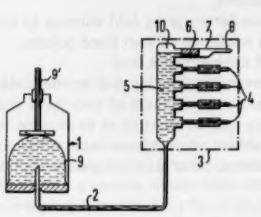
permitting said device to be maintained out of a saturation state, whereby the switching speed of the device is kept high.

4,126,868

AIR VENTING DEVICE FOR INK SUPPLY SYSTEMS OF INK MOSAIC PRINTERS

Wilhelm Kirner, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sep. 10, 1976, Ser. No. 721,950
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1975, 2543452
Int. Cl.[2] G01D *15/16*; B41J *27/00*
U.S. Cl. 346—140 R **7 Claims**



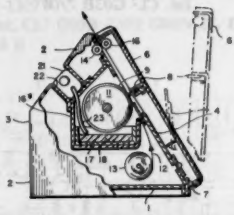
1. An air venting device for ink supply systems of jet printer units, comprising means forming an ink supply system connected to receive printing ink from a supply reservoir, means forming ink passageways connecting the respective ink jets with said supply system, the latter having an air venting passageway therein communicating at one end with the surrounding air, and at the other end with ink in said supply system, and which extends in the same direction as the printing jets, said air venting passageway having a diameter sufficiently small to produce a capillary effect, permitting venting of air from the supply system and simultaneously preventing undesired ink flow to the exterior and reverse air flow to the interior system adjacent the highest point thereof, supply system under pressure for expelling any air therein through such venting passageway to the atmosphere.

4,126,869

CHAFF TRAY FOR FACSIMILE RECORDER

Frederick W. Simpkins, Hudson, Mass., assignor to Alden Research Foundation, Westboro, Mass.

Filed Dec. 27, 1976, Ser. No. 754,754
Int. Cl.[2] G01D *15/06*
U.S. Cl. 346—165 3 Claims



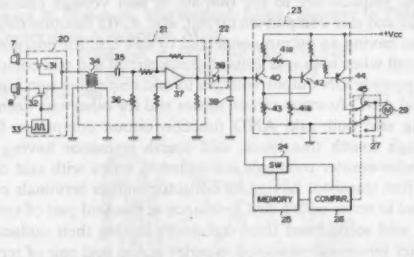
1. Apparatus for recording graphic electrical signals on a moist recording web comprising:
- a frame including means for holding a supply of recording web;
- means on the frame for feeding the web through a recording zone;
- means on the frame for recording on the web in said zone including marking means moving across the web, and
- a removable tray located directly below the marking means for receiving chaff removed from the web by the marking means and for holding a supply of water, said tray interposed between the moving marking means and the web supply holding means, whereby abraded chaff from the recording web is collected and the recording web is moisturized.

4,126,870

AUTOMATIC FOCUSING DEVICE

Toshihiro Kondo, Chofu, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 15, 1977, Ser. No. 833,578
Claims priority, application Japan, Nov. 30, 1976, 51-143844
Int. Cl.[2] G03B *7/08*
U.S. Cl. 354—25 9 Claims



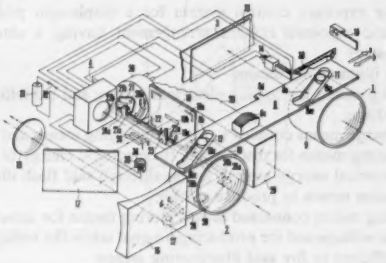
1. An automatic focusing device for a camera or the like comprising in combination:
- an objective having an optical axis,
- a lens drive means for moving said objective back and forth along the optical axis thereof,
- a light beam dividing means provided behind and on the optical axis of said objective for dividing a light beam passing through the objective into first and second divided light beams, said light beam dividing means being located in front of the focal plane of said objective,
- an optical refractive element located substantially on the focal plane of said objective in said first divided light beam,
- a first photodetector located behind said optical refractive element to receive light through said optical refractive element,
- a second photodetector located in said second light beam at a position optically conjugate with said first photodetector with respect to said light beam dividing means,
- an A.C. component detecting circuit connected with said photodetectors,
- an alternating switching circuit connected between said A.C. component detecting circuit and said photodetectors for alternately transmitting the outputs of said first and second photodetectors to said A.C. component detecting circuit, and
- a control means connected between said A.C. component detecting circuit and said lens drive means for controlling said drive means in accordance with the output of said A.C. component detecting circuit so that the objective is stopped at a position where the A.C. component is zero.

4,126,871

FOCUSING SYSTEM IN A CAMERA

Shuichi Tamura, Yokohama; Kazuya Hosoe, Machida, and Hideo Yokota, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 7, 1977, Ser. No. 831,117
Claims priority, application Japan, Sep. 8, 1976, 51-107400
Int. Cl.[2] G03B *7/08*
U.S. Cl. 354—25 17 Claims



1. A focusing system for focusing an image forming optical system on an object, said optical system having an optical axis and being adjustable along the axis, said focusing system comprising;
- (A) manually operable adjusting means for adjusting said optical system along the optical axis;
- (B) first indication means movable in response to the adjustment of the optical system so as to indicate the adjusted position of the optical system on the optical axis;
- (C) detecting means for detecting the in focus position of the optical system to the object, said detecting means providing an electrical signal representative of said in focus position of the optical system;
- (D) second indication means adapted for indicating said in focus position of the optical system detected by said detecting means; and
- (E) driving means for driving said second indication means, said driving means setting the second indication means to a position at which the second indication means indicates said in focus position of the optical system, in response to said electrical signal provided by said detecting means;

whereby proper focusing of the optical system on the object can be made by so adjusting the optical system that the first indication means matches with the in focus position indicated by the second indication means.

4,126,872

APERTURE SETTING DEVICE FOR CAMERA

Mutsunobu Yazaki; Takashi Uchiyama; Mutsuhide Matsuda, all of Yokohama; Tetsuya Taguchi, Kawasaki, and Yukio Mashimo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

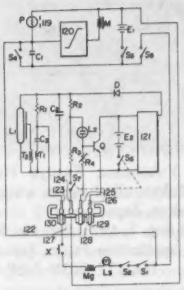
Continuation of Ser. No. 576,441, May 12, 1975, Pat. No. 4,030,108, which is a continuation of Ser. No. 399,480, Sep. 21, 1973, abandoned. This application Nov. 8, 1976, Ser. No. 739,989

Claims priority, application Japan, Sep. 25, 1972, 47-95997; Sep. 26, 1972, 47-96474

The portion of the term of this patent subsequent to Jun. 14, 1994, has been disclaimed.

Int. Cl.[2] G03B 7/16

U.S. Cl. 354—33 5 Claims



1. An exposure control system for a diaphragm priority automatic exposure camera arrangement having a shutter, comprising;

flash illuminating means;

storing means for storing electrical energy and exhibiting a voltage;

discharge means coupled to said illuminating means and said storing means for discharging the electrical energy of said electrical energy storing means through said flash illumination means to produce a flash;

sensing means connected to said storing means for detecting the voltage and for producing a signal when the voltage is sufficient to fire said illuminating means;

diaphragm means for defining an aperture size in said camera;

diaphragm adjusting means operatively connected to said diaphragm means for adjusting said diaphragm means to a first aperture size suitable for taking photographs with said flash illuminating means and a second aperture size suitable for daylight photography;

shutter adjusting means operatively connected to the shutter of the camera for adjusting said shutter to a first exposure interval suitable for taking flash photographs with said flash illuminating means and a second interval suitable for daylight photography, the exposure interval suitable for daylight photography depending at least on a predetermined aperture size suitable for daylight photography; and

automatic switchcover means responsive to an output signal of said detecting means and coupled with said shutter adjusting means for automatically changing said shutter adjusting means to said first interval in response to the signal of said sensing means, said automatic switchover means being coupled with said diaphragm adjusting means for automatically changing said diaphragm adjusting means to the first size in response to the signal of said sensing means, so that the shutter is adjusted to the setting providing said flash exposure interval and the diaphragm means is adjusted to the setting providing said flash aperture size.

4,126,873

CONTROL CIRCUIT FOR THE SHUTTER HOLDING MAGNET OF A CAMERA

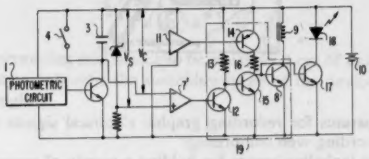
Fumio Urano, Omiya, and Masahiro Kawasaki, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1976, Ser. No. 686,442

Claims priority, application Japan, May 16, 1975, 50-58367

Int. Cl.[2] G03B 7/08

U.S. Cl. 354—51 2 Claims



1. In a camera circuit of the type having a pair of terminals adapted to be connected to a power source, an electromagnet energizing coil for energizing an electromagnet to hold a shutter screen in one position, a comparison circuit for providing an ON output and an OFF output, respectively, to control the energization and deenergization of said coil during normal operation of said camera circuit, the improvement comprising, a voltage check circuit connected to said power source for providing an ON output when the voltage across said pair of terminals is at or above a predetermined voltage for operating said camera circuit and an OFF output when the voltage across said pair of terminals is below said predetermined voltage, and AND function circuit means having two inputs connected respectively to the outputs of said voltage checking circuit and said comparison circuit, said AND function circuit means having an output connected to said coil for energizing said coil when both said voltage check circuit and said comparison provide ON output voltages to said respective two inputs of said AND function circuit means and for otherwise deenergizing said coil, said AND function circuit comprises, first through fourth transistors, said fourth transistor having its collector-emitter terminals connected in series with said coil, said first transistor having its collector-emitter terminals connected in series with a first resistance across said pair of terminals, said second and third transistors having their collector-emitter terminals connected in series across said pair of terminals, the output terminal of said first transistor being connected to the input terminal of said third transistor, and the output terminal of said third transistor being connected to the input terminal of said fourth transistor, the input terminals of said first and second transistors being connected to the outputs of said comparison circuit and voltage check circuit, respectively, for turning on said first and second transistors only in response to respective ON outputs therefrom, whereby ON outputs from both circuits result in said third transistor being cut off and said fourth transistor being conducting, and a visual alarm circuit connected to the output of said AND function circuit means for providing a visual indication of energization state of said coil.

4,126,874

POWER SUPPLY CIRCUIT FOR CAMERA

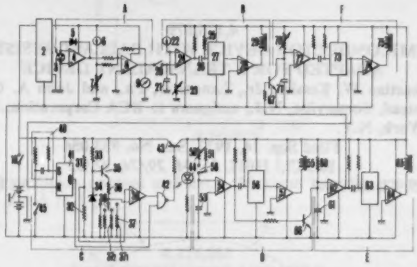
Ryoichi Suzuki, Kawasaki; Masanori Uchidoi, Yokohama; Yukio Mashimo, Tokyo; Tetsuya Taguchi, Kawasaki; Yusuke Ono, Tokyo, and Hiroshi Aizawa, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1976, Ser. No. 752,175

Claims priority, application Japan, Dec. 27, 1975, 51-156680; Feb. 9, 1976, 51-13077

Int. Cl.[2] G03B *7/00;* G01N *27/42*

U.S. Cl. 354—60 R 12 Claims



1. A power supply circuit for a camera comprising:
(a) a power source;
(b) voltage detection means which is connected to said power source for detecting the voltage of said power source and which develops a signal when the voltage of said power source is beyond a predetermined voltage value;
(c) signal forming means which forms an output signal after a predetermined time after the power source voltage is detected by said voltage detection means;
(d) an electrical circuit for controlling a photographing operation; and
(e) a power supply circuit connected to the power source to form a power supply path to said electrical circuit in response to the signal produced by said voltage detection means and the signal produced by said signal forming means.

4,126,875

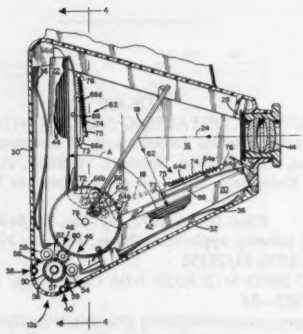
DUAL FILM CAMERA

Richard R. Wareham, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 3, 1977, Ser. No. 756,140

Int. Cl.[2] G03B *17/50, 19/06*

U.S. Cl. 354—86 16 Claims



1. In a self-developing photographic camera for exposing and processing film at either of first and second image planes and having image directing means for selectively directing an optical image from a taking lens to either image surface, and having means for advancing exposed film from each such image plane along a respective one of first and second film advance paths, the improvement comprising
A. first, second and third processing rollers,
B. means fixedly mounting said rollers in the camera with the second roller forming a first nip with said first roller along said first film advance path and forming a second nip with said third roller along said second film advance path, and
C. bidirectional drive means for rotatably driving said rollers in a first rotational condition when said image directing means directs the image to said first plane, and in the opposite, second rotational condition when said image directing means directs the image to said second plane.

4,126,876

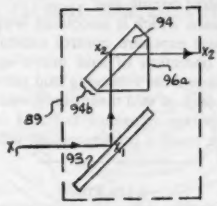
SNAPSHOT TYPE THREE DIMENSIONAL CAMERA

Harry S. Jones, 50 Navesink Dr., Monmouth Beach, N.J. 07750

Continuation-in-part of Ser. No. 389,725, Aug. 20, 1973, abandoned. This application Nov. 3, 1975, Ser. No. 627,946

Int. Cl.[2] G03B *35/08*

U.S. Cl. 354—112 5 Claims



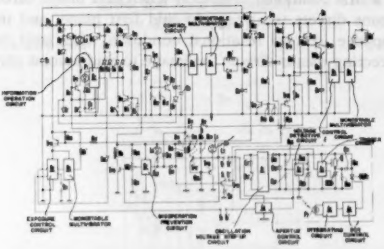
1. In a camera construction for taking stereoscopic pictures and of the type comprising
(a) a primary lens system,
(b) lenticulated plate means disposed remote from said primary lens system and having associated therewith a photosensitive surface, and
(c) a multielement image format reversal system disposed in close proximity to said primary lens system,
(d) said lenticular plate means and said multielement image format reversal system being arranged on the optical path of said primary lens system, the improvement in said image format reversal system comprising,
(e) an array of a plurality of internally reflecting image reversal prisms mounted side-by-side in closely adjacent relation,
(f) said image reversal prisms having two intersecting internally reflecting surfaces, and a third surface accommodating entry and exit of light rays,
(g) the lines of intersection of the intersecting surfaces of said image reversal prisms, and the third surface of said prism, being substantially parallel,
(h) the respective third surfaces of said image reversal prisms being coplanar,
(i) a larger, common prism, formed with a hypotenuse surface and being mounted with said hypotenuse surface mounted in interfacial relation with the said third surfaces of the plurality of said image reversal prisms.

4,126,877

SAFETY DEVICE FOR AN EXPOSURE AMOUNT CONTROL EQUIPMENT

Syohei Ohtaki, Yokohama; Zenzo Nakamura, Urawa; Tokuichi Tsunekawa; Tadashi Ito, both of Yokohama; Hiroshi Aizawa, Machida, and Takashi Uchiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1976, Ser. No. 673,053
Claims priority, application Japan, Apr. 9, 1975, 50-43104
Int. Cl.[2] G03B *15/05, 17/38*
U.S. Cl. 354—149 9 Claims



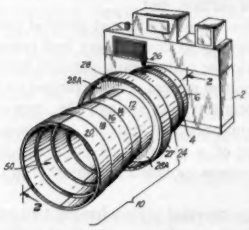
1. A photographic camera having a mirror, which camera is used together with an electronic flash device having a storage capacitor means, comprising:
(a) mirror-up means for driving said mirror;
(b) exposure control means having an electrical exposure control circuit for controlling an exposure value;
(c) an electrical energy source for energizing the electrical exposure control circuit; and
(d) blocking means which is associated with said mirror-up means and said exposure control means for preventing initiation of operation of said mirror-up and exposure control means and for removing said prevention to allow operation of each of said means only when both the voltage of said storage capacitor and that of said electrical energy source reach a predetermined value.

4,126,878

OPTICAL FRAMING DEVICE FOR PHOTOGRAPHIC CAMERAS

Irving Steiner, 34 Edwards Rd., Mastic Beach, L.I., N.Y. 11951

Filed May 24, 1976, Ser. No. 688,990
Int. Cl.[2] G03B *11/00;* G02B *27/02*
U.S. Cl. 354—296 14 Claims



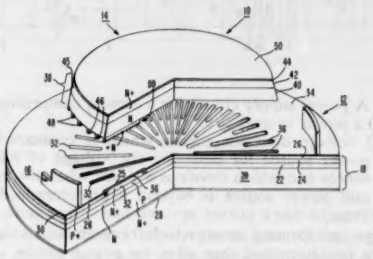
1. An improved optical framing device for a camera, comprising: a plurality of circular rings together forming a continuous hood-like device adapted to be attached about the lens of said camera, each of said circular rings being at least translucent and comprising a plurality of arcuate segments, said circular rings being concentrically positioned about a central axis of said optical framing device, the diameter of each ring successively decreasing from the front of said device to the portion of said device attached to said lens, and each ring comprising two or more differently colored arcuate segments, whereby light transmitted through said arcuate segments of said ring elements generate a halo effect of substantially concentric circular bands made up of arcuate segmental portions of light of different coloring or shading blended about the central image formed in said camera and on a developed photograph produced from film used in said camera.

4,126,879

SEMICONDUCTOR DEVICE WITH BALLAST RESISTOR ADAPTED FOR A TRANSCALENT DEVICE

Sebastian W. Kessler, Jr., Lancaster, Pa., and John A. Olmstead, Somerville, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 14, 1977, Ser. No. 833,056
Int. Cl.[2] H01L *25/04, 29/74, 27/02*
U.S. Cl. 357—82 8 Claims



1. A semiconductor device comprising:
a first body of semiconductor material having first and second major opposing surfaces, and a plurality of regions of a first conductivity type extending along the first surface;
a second body of semiconductor material of a given conductivity type forming a resistor, the second body having opposed first and second major surfaces and a plurality of mesa fingers extending from the first major surface in a substantially mirror symmetrical pattern with respect to the regions of the first body; and
means for securing the second body to the first body such that each of the mesa fingers is in electrical and thermal contact with a corresponding first region.

4,126,880

GERMANIUM-CONTAINING SILICON NITRIDE FILM

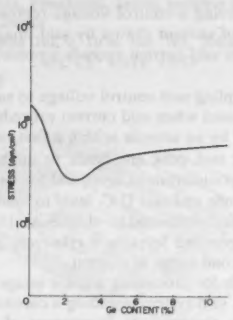
Yoichi Tamaki; Seiichi Isomae, both of Kokubunji; Masahiko Ogirima, Tokyo; Akira Shintani, Hachioji, and Michiyoshi Maki, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 4, 1977, Ser. No. 756,863
Claims priority, application Japan, Feb. 13, 1976, 51/14027; Mar. 10, 1976, 51/25150
Int. Cl.[2] B05D *5/12;* B32B *9/04;* C04B *35/16;* H01L *29/14*
U.S. Cl. 357—54 15 Claims

1. A germanium-containing silicon nitride film formed on a support surface, wherein the germanium content of said film is 0.5 to 10 atomic% of the silicon content and said film has a thickness of 400 Å to 1 μm.

7. In a semiconductor device having a silicon nitride film

disposed on the surface thereof, the improvement wherein said silicon nitride film has a germanium content of 0.5 to 10 atomic



% of its silicon content and has a thickness lying in a range from 400 Å to 1 μm.

4,126,881

SEMICONDUCTOR MEMORY

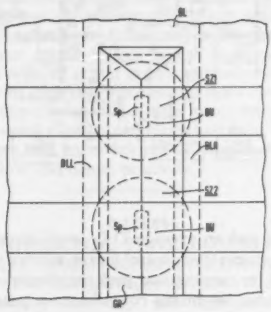
Paul-Werner von Basse, Wolfratshausen, and Rüdiger Hofmann, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

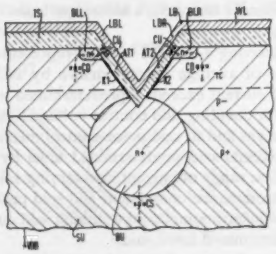
Filed Aug. 17, 1977, Ser. No. 825,225

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1976, 2642615

Int. Cl.² H01L *29/06*

U.S. Cl. 357—55 **6 Claims**





1. A semiconductor memory comprising:

a plurality of storage cells aligned in a row;

a plurality of word lines, each of said word lines crossing a respective one of said storage cells,

each of said storage cells including a pair of selector transistors and a storage capacitance formed and electrically connected to the respective word line by a structure comprising

a semiconductor substrate highly doped with a dopant of one conductivity type,

a buried layer in said substrate highly doped with a dopant of the opposite conductivity and with said substrate forming said storage capacitance,

an epitaxial layer weakly doped with dopant of the one conductivity type carried over said buried layer and said substrate,

a surface layer in the surface of said epitaxial layer over said buried layer of each of said memory cells, said surface layer being highly doped with dopant of the other conductivity type and forming a bit line,

a V-shaped groove extending longitudinally of said storage cells and dividing said surface layer and thus said bit line into two sub-portions and extending through said epitaxial layer into said buried layer of each of said memory cells,

an insulating layer carried over said epitaxial layer over said surface layer and over the surface of said groove, and

a conductive path carried by said insulating layer over said buried layer and forming the respective word line.

4,126,882

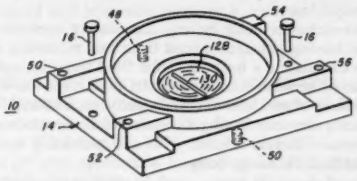
PACKAGE FOR MULTIELEMENT ELECTRO-OPTICAL DEVICES

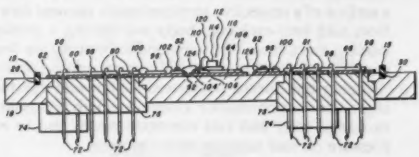
Kent R. Carson, McKinney, and Charles M. Hess, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 2, 1976, Ser. No. 710,771

Int. Cl.² H01L *23/02, 23/12, 23/16*

U.S. Cl. 357—74 **5 Claims**





1. A package for a multielement electro-optical device comprising:

(a) a base means for supporting a multielement optical device including:

(i) a base plate having walls forming a plurality of apertures;

(ii) a plurality of electrical connecting pins;

(iii) holding means mounted in the base plate apertures for supporting the connector pins;

(iv) an electrically insulating substrate having walls forming a plurality of apertures, said plurality of apertures providing passages for the plurality of connecting pins through the substrate;

(v) electrical patterns formed on said electrically insulating substrate, said patterns defining a site for the multielement electro-optical device to be mounted on the

substrate and including terminal pads for electrically connecting the device to the electrical patterns;

(vi) mechanical fasteners loosely securing the electrically insulating substrate to the base plate to reduce substantially stresses therebetween; and

(b) a cover means for attachment to the base means, said cover means including an aperture means in optical alignment with the site for the multielement electro-optical device.

4,126,883

PRESSURE-MOUNTED SEMICONDUCTIVE STRUCTURE

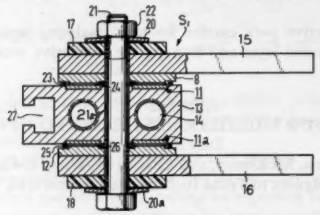
Heinz Martin, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 9, 1977, Ser. No. 775,979

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1976, 2611749

Int. Cl.[2] H01L *25/04, 23/32, 23/42*

U.S. Cl. 357—82 **4 Claims**



1. In a semiconductor structure having a semiconductor component which can be subjected to pressure, the combination comprising:

a heat-exchange body having a mounting aperture therein and having passages spaced from said mounting aperture for circulating a heat-exchange fluid therethrough;

a pair of semiconductor elements positioned on opposing surfaces of said heat-exchange body, each of said semiconductor elements having a concentrically located mounting aperture therein aligned with said mounting aperture of said heat-exchange body;

a pair of electrode means, each having a mounting aperture therein aligned with said mounting aperture of said heat-exchange body, each electrode means being positioned on a surface of a respective semiconductor element face away from said heat-exchange body and having a portion extending away from said semiconductor structure for electrical coupling to an electrical current source; and

a clamping bolt means positioned within said apertures to align said semiconductor elements relative to said heat-exchange body and said electrode means and to exert a pressure on said semiconductor element.

4,126,884

KINESCOPE BEAM CURRENT LIMITER EMPLOYING AUTOMATIC SEQUENTIAL CONTROL OF IMAGE CONTRAST AND BRIGHTNESS TO LIMIT BEAM CURRENT

Robert L. Shanley, II, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 5, 1977, Ser. No. 794,088

Int. Cl.[2] H04N *9/535, 5/58, 5/68*

U.S. Cl. 358—21 **19 Claims**

1. In a system for processing an image representative video signal having a peak amplitude determinative of image contrast and a D.C. level determinative of image brightness, said system including a video signal transmission channel, and an image reproducing device for reproducing an image in response to video signals transmitted via said channel, current drawn by said image reproducing device being responsive to said peak amplitude and said D.C. level of said video signal, apparatus comprising:

means for deriving a control voltage representative of the magnitude of current drawn by said image reproducing device when said current exceeds a predetermined level; and

means for coupling said control voltage to said signal transmission channel when said current exceeds said predetermined level by an amount within a first range of current for varying said peak amplitude to inhibit said current above said predetermined level, and for varying both said peak amplitude and said D.C. level to inhibit said current above said predetermined level when said current exceeds said predetermined level by a relatively greater amount within a second range of current.

14. In a system for processing a color image representative television signal, said system including a chrominance channel for processing a chrominance component of said television signal, color control means coupled to said chrominance channel for varying the gain of said chrominance channel and thereby the amplitude of said chrominance component; a luminance channel for processing a luminance component of said television signal having a peak amplitude determinative of

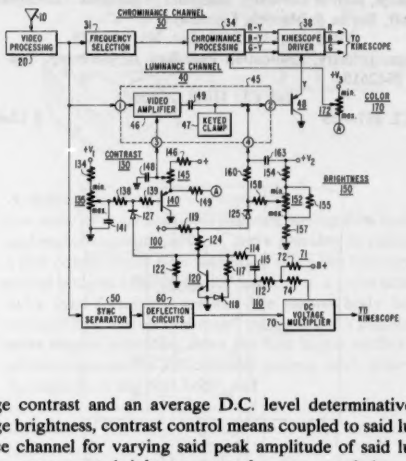


image contrast and an average D.C. level determinative of image brightness, contrast control means coupled to said luminance channel for varying said peak amplitude of said luminance component, brightness control means coupled to said luminance channel for varying said average D.C. level of said luminance component; and a kinescope for reproducing a color image in response to television signals coupled via said chrominance and luminance channels, a kinescope beam current limiter comprising:

means for deriving a control voltage representative of the magnitude of average current drawn by said kinescope when said current exceeds a predetermined level;

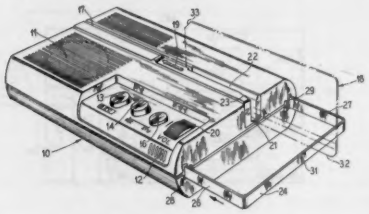
first means for coupling said control voltage to said contrast control means and to said color control means when said current exceeds said predetermined level by an amount within a first range of current, for varying said amplitude of said chrominance component and said peak amplitude of said luminance component to inhibit said current above said predetermined level; and

second means for coupling said control voltage to said brightness control means when said current exceeds said predetermined level by a relatively greater amount within a second range of current, for varying said D.C. level and thereby said image brightness to inhibit said current above said predetermined level.

4,126,885
CARD RECORDING AND/OR REPRODUCING APPARATUS

Yukishige Murata, Funabashi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 9, 1976, Ser. No. 704,089
Int. Cl.[2] G11B *25/04*
U.S. Cl. 360—2 **8 Claims**

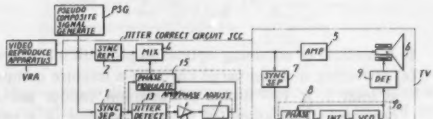


1. A magnetic recording and/or reproducing apparatus with card guide path for a card having a pair of elongated magnetic parallel tracks comprising, means for driving said card, a machine chassis, a main head chassis, a recording head mounted on said main head chassis which is pivotably attached on said machine chassis and biased by spring toward said card in order to be in operative relationship with said magnetic tracks on said card, an erase head movably mounted relative to said recording head on said main head chassis so as to maintain a predetermined relationship to said magnetic track as said card moves through apparatus, wherein said main chassis is mounted for vertical movement between upper and lower positions wherein said magnetic head is aligned with one or the other of said magnetic tracks, upper and lower horizontal stoppers engageable with said main chassis such that said upper horizontal stopper determines said upper position and said lower horizontal stopper determines said lower position, and over-the-center spring biasing means engageable with said main chassis with its center position between said upper and lower positions such that it biases said main chassis upwardly against said upper horizontal stopper when the main chassis is above said center position and biases said main chassis downwardly against said lower horizontal stopper when said main chassis is below said center positions.

4,126,886
JITTER CORRECTING SYSTEM USING A PSEUDO COMPOSITE VIDEO SIGNAL FOR USE IN A VIDEO REPRODUCTION APPARATUS

Ichiro Takahara, Kadoma, and Hiroyoshi Hashimoto, Neyagawa, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 16, 1976, Ser. No. 714,904
Claims priority, application Japan, Aug. 25, 1975, 50-103202; Feb. 9, 1976, 51-14246
Int. Cl.[2] H04N *5/795*
U.S. Cl. 360—37 **12 Claims**



1. A jitter correcting system in a video reproducing apparatus for reproducing a composite video signal of a given television system from a recording medium recorded with a composite video signal thereon, the reproduced composite video signal being applied through said jitter correcting system to a monitor television receiver having an automatic frequency control for horizontal deflection in the receiver, said composite video signal comprising a vertical synchronizing signal, a horizontal synchronizing signal and a video signal, said jitter correcting system comprising:

detector means responsive to the reproduced composite video signal for detecting a phase fluctuation in said reproduced composite video signal,

compensating signal generating means responsive to said phase fluctuation detected output for providing a signal for compensating for the phase difference between the video signal and the output from said automatic frequency control caused by said automatic frequency control, said phase fluctuation causing a jitter on the screen of said monitor television receiver,

means responsive to said compensating signal for phase modulating the horizontal synchronizing signal in said reproduced composite video signal for providing a modified composite video signal with a phase modulated horizontal synchronizing signal,

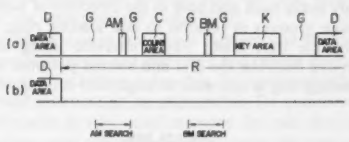
adjusting means coupled to said compensating signal generating means for adjusting the generation of said compensating signal, and

means coupled to said detector means for generating a pseudo composite video signal including a vertical synchronizing signal, a horizontal synchronizing signal and a marking signal in a predetermined phase position of the video signal region of said composite video signal, said horizontal synchronizing signal of said pseudo composite video signal being phase shifted as compared with that of said television system, said pseudo composite video signal being supplied through said jitter correcting system to said monitor television receiver in place of said reproduced composite video signal, whereby adjustment of said adjusting means is made while an indication by said marking signal in said pseudo composite video signal on the screen of said television receiver is observed.

4,126,887
METHOD OF CONTROLLING ROTARY MEMORY

Michio Miyazaki, and Masafumi Nozawa, both of Odawara, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 17, 1976, Ser. No. 715,153
Claims priority, application Japan, Sep. 12, 1975, 50-110060; Sep. 12, 1975, 50-110061
Int. Cl.[2] G11B *5/09*
U.S. Cl. 360—49 **2 Claims**



1. A method of detecting a failure to read a recorded address marker from a rotary memory which includes a plurality of sequentially accessible recording locations each having an address area following said address marker and a data area succeeding said address area, said data area containing a given recorded data which is to be read out when said address marker is detected, said method comprising the steps of:

recording an address marker ahead of said address area and a block marker between said address area and said data area in each of the recording locations;

searching for said address marker in each of said recording locations;

searching for said block marker when said address marker is not detected; and

further searching for said undetected address marker of a

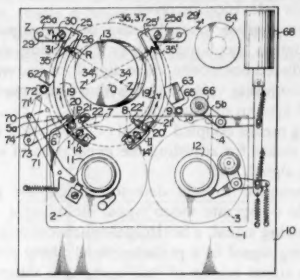
given recording location when said address marker is not detected but said block marker is detected.

4,126,888

MAGNETIC RECORDING AND REPRODUCING APPARATUS OF ROTATING HEAD TYPE

Yoshiaki Hayashi, and Nobuyoshi Fujimori, both of Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 25, 1977, Ser. No. 790,544
Claims priority, application Japan, May 4, 1976, 51-51025
Int. Cl.[2] G11B *15/66*
U.S. Cl. 360—85 **5 Claims**



1. A magnetic tape recording and reproducing apparatus of the rotary head type, in which a magnetic tape cassette containing a magnetic tape is loaded, comprising:

a base plate;

a head cylinder mounted on said base plate and having a rotary head, a pair of guide grooves being provided in said base plate on either side of said head cylinder and extending between a first position adjacent said head cylinder and a second position adjacent a magnetic tape cassette loaded in said apparatus;

a movable base slidably engaged within each of said guide grooves, said movable base having a vertical pin affixed thereto;

a pair of loading rings provided below said base plate;

driving means for rotating each said loading ring; and

means for connecting each said movable base to one of said loading rings so that said movable base integrally moves with each said loading ring along a different one of said guide grooves, said means being further adapted to slidably move each said base in the direction of width of said guide grooves in relation to said loading ring, each said movable base being freely movable along said guide groove between the first and second positions when said loading ring is operated through said driving means.

4,126,889

PROTECTIVE CIRCUIT FOR D.C. CIRCUIT

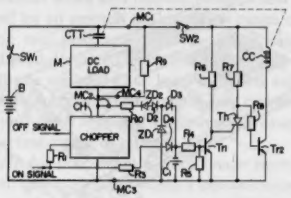
Masahiko Ibamoto; Shigeru Kuriyama, both of Katsuta, and Genichi Matsumoto, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 15, 1977, Ser. No. 787,844
Claims priority, application Japan, Apr. 28, 1976, 51-47762
Int. Cl.[2] H02H *3/24*
U.S. Cl. 361—92 **11 Claims**

1. A protective circuit for protecting a main d.c. circuit which is composed of a d.c. power source, a d.c. load connected at one terminal thereof to one terminal of said d.c. power source through switching means, and a chopper connected at one terminal thereof to the other terminal of said d.c. load and at the other terminal thereof to the other terminal of said d.c. power source, said protective circuit comprising:

first means including a first resistor connected in parallel with the series connection of said switching means and said d.c. load, for shunting said series connection with said first resistor;

second means connected at one terminal thereof through a connector, to a junction point to which said other terminal of said d.c. load, said one terminal of said chopper, and one terminal of said first resistor are connected, for delivering from the other terminal thereof a signal synchronous with on-off said chopper;



third means for detecting commutation failure of said chopper to produce an output signal, on the basis of the output signal of said second means and a signal corresponding to a chopper-on signal applied to said chopper; and

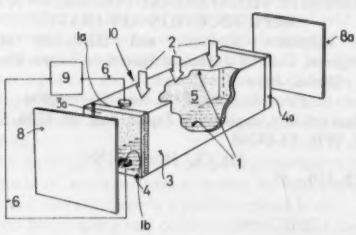
fourth means for actuating said switching means in response to the output signal of said third means thereby disconnecting said d.c. load from said d.c. power source.

4,126,890

LASING DEVICE AND METHOD USING MERCURY AND CADMIUM OR AMMONIA

Georges Fournier, 2019 Brulart, Sillery 6, Quebec, Canada, and Malcolm McGeoch, Flat A, 1 Cranley Gardens, London N10, England

Filed Jan. 19, 1977, Ser. No. 760,617
Claims priority, application Canada, Jan. 19, 1976, 243765
Int. Cl.[2] H01S *3/22*
U.S. Cl. 331—94.5 G **30 Claims**



1. A method of obtaining optical amplification comprising:

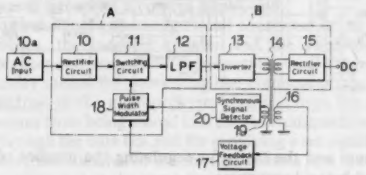
(a) providing in a discharge chamber a mixture comprising at least 5×10^{16} atoms of cadmium vapour per cubic centimeter and atoms of mercury vapour in a ratio of mercury atoms to cadmium atoms of from 2:1 to 100:1, the total number density in the mixture not exceeding 10^{21} atoms per cubic centimeter and

(b) exciting said mixture by creation of an electron density of 10^{14} and 10^{15} electrons per cubic centimeter in said discharge chamber whereby to cause an optical amplification.

4,126,891
SWITCHING REGULATOR WITH FEEDBACK SYSTEM FOR REGULATING OUTPUT CURRENT

Tadao Suzuki, and Shigeaki Wachi, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 17, 1976, Ser. No. 751,641
Claims priority, application Japan, Dec. 24, 1975, 50-153345
Int. Cl.[2] H02M 7/217
U.S. Cl. 363—26 7 Claims

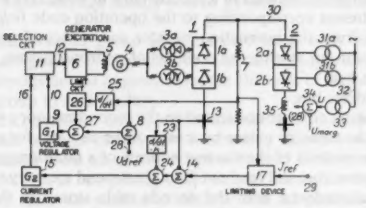


1. A switching regulator comprising:
(a) a DC voltage source means;
(b) first switching means supplied with the output of said DC voltage source means and producing a first pulse signal;
(c) a pulse width modulator for applying a pulse width modulation signal to said first switching means;
(d) a low pass filter supplied with said first pulse signal and producing a first DC voltage;
(e) second switching means supplied with said first DC voltage and producing a second pulse signal across an output transformer having primary and secondary windings;
(f) a rectifier circuit supplied with said second pulse signal and producing a second DC voltage; and
(g) feedback circuit means connected between further separate secondary winding means of said output transformer and said pulse width modulator for supplying a DC voltage feedback signal and a separate synchronizing control pulse signal to said pulse width modulator in response to said second pulse signal.

4,126,892
SELECTIVE VOLTAGE AND CURRENT CONTROL FOR HIGH VOLTAGE D.C. TRANSMISSION SYSTEMS

Ake Ekstrom; Kjell Eriksson, and Lars-Erik Juhlin, all of Ludvika, Sweden, assignors to Asea AB, Vasteras, Sweden

Continuation of Ser. No. 606,593, Aug. 21, 1975, abandoned.
This application Feb. 7, 1977, Ser. No. 766,004
Claims priority, application Sweden, Sep. 11, 1974, 7411456
Int. Cl.[2] H02M 5/45
U.S. Cl. 363—35 5 Claims

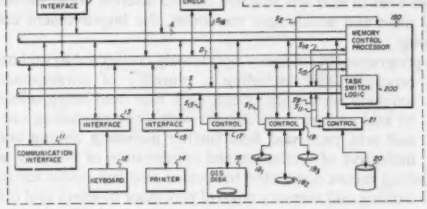


1. High voltage direct current transmission system comprising a rectifier station and an inverter station connected together by a DC line, the rectifier station comprising uncontrolled valves and means for controlling the alternating voltage connected to the valves, said means for controlling comprising first and second control circuits for controlling said alternating voltage, said first control circuit being controlled in dependence on the DC line voltage, and said second control circuit being controlled in dependence on the DC line current, said second control circuit being responsive to a predetermined current reference value and further including means for adjusting said current reference value in accordance with said DC line voltage so that said current reference valve is reduced with decreasing line voltage, and a circuit for selecting said first control circuit during normal operation of said rectifier station and said inverter station and for selecting said second control circuit upon detection of an over-current condition in said rectifier station.

4,126,893
INTERRUPT REQUEST CONTROLLER FOR DATA PROCESSING SYSTEM

David Cronshaw, Torrance; William D. Turner, San Marino, and Jack E. Shemer, Los Angeles, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 17, 1977, Ser. No. 769,593
Int. Cl.[2] G06F 13/08, 9/19
U.S. Cl. 364—200 6 Claims

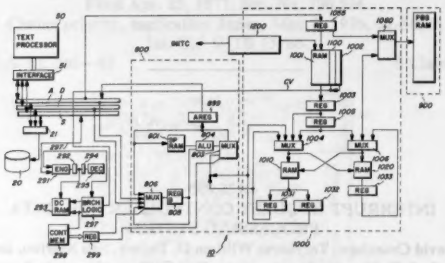


1. In a data processing system comprising a microprocessor adapted to execute input instructions selected by a user, a serial memory adapted to store a plurality of code words in predetermined groups, and a plurality of input and output devices adapted to communicate between said user and said microprocessor, the improvement comprising:
an external bus system connected between said microprocessor, serial memory and said input and output devices, said bus system including a data bus for communicating data and said instructions, an address bus for communicating the location in said serial memory for said data and instructions, and a control bus for communicating control signals indicating which of said microprocessor, serial memory and input and output devices is communicating said data and instruction signals;
priority selecting means, connected to said control bus, and including control memory means for arranging said control signals into a predetermined order of priority and storing a program in said control memory corresponding to each said control signal, each program including periodic break points, said priority selecting means including feedback means rendered operative by each said break point for removing a currently selected control signal from the selection of the next program; and
accelerator memory means, connected to said data bus and said priority selecting means, for automatically transferring said data and instructions from said serial memory in response to one of said program sequences.

4,126,894
MEMORY OVERLAY LINKING SYSTEM

David Cronshaw, Torrance; James R. Keddy, Huntington Beach; Jack E. Shemer, Los Angeles, and William D. Turner, San Marino, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 17, 1977, Ser. No. 769,612
Int. Cl.[2] G06F *13/08, 9/10*
U.S. Cl. 364—200 6 Claims



2. In a data processing system including a main processor producing address codes, a main memory having stored therein a plurality of data or instruction codes in uniquely addressable sets selectable by said address codes, an accelerator memory connected to communicate with said main processor having stored therein selected ones of said sets, and a memory control processor connected to said main and accelerator memories for periodically exchanging ones of said sets for other ones of said sets selected by said address codes between said main and accelerator memories, the improvement comprising:

a programmable memory operatively connected to said main processor and including a plurality of corresponding uniquely addressable fields each said field being selected by said address code current with a corresponding one of said sets, each said field further including linking codes indicative of predetermined combination of said sets; and

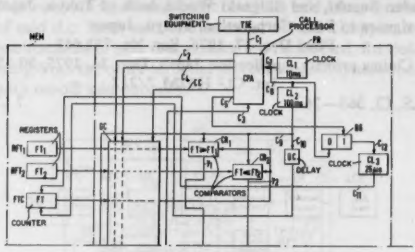
linking means connected to receive said link codes for controlling said memory control processor to select said other ones of said sets in said predetermined combinations, said memory control processor including a microprogram store, a program counter for advancing said microprogram store, overlay means controlled by said microprogram store and branch means connected to said program counter for modifying the advancement of said microprogram store according to said linking codes.

4,126,895
DATA PROCESSING SYSTEM WITH MONITORING AND REGULATION OF PROCESSOR FREE TIME

Freddy W. G. Weemaes, De Klinge, and Valère J. M. Carruet, Mechelen, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 29, 1975, Ser. No. 644,743
Int. Cl.[2] G06F *3/00, 11/00*
U.S. Cl. 364—200 7 Claims

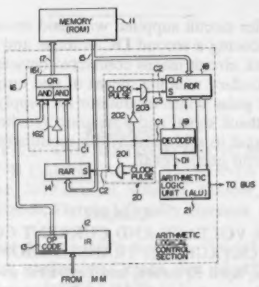
1. In a data processing system, apparatus for measuring and regulating computer work load, the work load comprising calls randomly originated and processed through said system, in which the processing of priority tasks within said system is initiated within the computer at predetermined time intervals, the invention comprising: means for monitoring the condition of said computer at successive timed subintervals, means for counting and storing a continuing count of the total of one of said monitored conditions over a predetermined timed period comprising a multiple of said time intervals, a first and a second settable register for storing first and second numbers representing upper and lower limits for said count, means operative at the end of said timed period for comparing said stored count against said upper and lower limits, and a work load regulator responsive to the results of the comparison between the monitored count and the limits for regulating the number of calls processed by said computer.



4,126,896
MICROPROGRAMMED LARGE-SCALE INTEGRATION (LSI) MICROPROCESSOR

Isamu Yamazaki, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 1, 1977, Ser. No. 783,637
Claims priority, application Japan, Apr. 1, 1976, 51-35188
Int. Cl.[2] G06F *9/16*
U.S. Cl. 364—200 6 Claims



1. A microprogrammed LSI microprocessor comprising:

an instruction register for storing at least an operation code field of a macroinstruction;

memory means constituted by a first memory section for storing the contents of a decode table in which are located addresses corresponding to the operation code field read out from the instruction register and a second memory section for storing the contents of microprograms;

a data bus;

an address bus;

a location counter connected to the second memory section of the memory means by means of the data bus for storing the contents of the starting address of a microprogram to be executed and read out from the second memory section in accordance with the decode table stored in the first memory section and for transferring the contents of said starting address to the memory means through the address bus, said operation code field from the instruction register being used to designate said starting address;

a microinstruction register connected to the second memory section by means of the data bus for storing a microinstruction read out from the second memory section, said microinstruction having been designated by the contents of the starting address read out from the location counter;

decoder means for decoding a microinstruction read out from the microinstruction register;

an arithmetic logic unit connected to the microinstruction register for executing a microinstruction read out therefrom;

a data selection control circuit connected by means of the address bus between the memory means and the instruction register and between the memory means and the location counter for selectively supplying to the memory means the operation code field from the instruction register or the starting address data of microinstructions from the location counter according to whether the decoder means generates a control signal; and

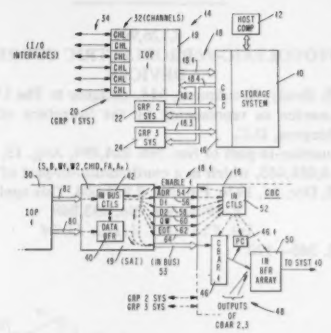
a control signal generating circuit connected to the decoder means, the location counter and the microinstruction register and responsive to a control signal from said decoder means for preventing the contents of the starting address of the microprogram read out from the memory means from being stored into the microinstruction register through the data bus and for supplying a set signal so as to store the contents of the starting address into the location counter and at the same time supplying a signal so as to clear the microinstruction register.

4,126,897

REQUEST FORWARDING SYSTEM

Robert S. Capowski, Verbank; Matthew A. Krygowski, Wappingers Falls, and Terrence K. Zimmerman, Red Hook, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 5, 1977, Ser. No. 813,404
Int. Cl.[2] G06F *3/00, 13/00*
U.S. Cl. 364—200 **14 Claims**



1. In a data processing system, including multiple input/output channels arranged in plural groups of channels and an addressable storage facility shared by said channels, in combination:

plural channel group adapters associated with respective said groups of channels for transferring input and output storage access requests from the channels of the respective group to said facility;

a bus controller unit intermediate said group adapters and said storage facility for forwarding requests asynchronously from all of said adapters to said facility; said controller unit comprising buffer storage means having capacity reserved relative to each of said adapters for potentially enqueueing plural requests of each adapter simultaneously;

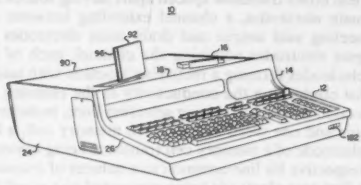
request busing interconnection means, intermediate each adapter and said bus controller unit, comprising a bus for transferring request information from the associated adapter to said bus controller unit; an Enable line controlled by said bus controller unit for enabling the associated adapter to transfer request signals to said bus whenever the capacity reserved in said buffer storage means relative to said adapter includes a vacant space for storing a request; and plural tag lines controlled by the associated adapter for enabling said bus controller unit to: (a) distinguish successive requests presented by the associated adapter; (b) distinguish between input and output requests; (c) orient plural data words of one input request in a selected order of spatial succession for storage in said facility, said spatial order being susceptible of differing from the time order of succession in which said words have been received from said bus; and (d) produce at least one implicit address from an explicit address accompanying a request, said implicit address designating a storage space in said facility contiguous to a space designated by said explicit address.

4,126,898

PROGRAMMABLE CALCULATOR INCLUDING TERMINAL CONTROL MEANS

Richard M. Spangler; Eugene V. Burmeister; Frank E. Cada; Wayne F. Covington; Chris J. Christopher; Myles A. Judd; Freddie W. Wenninger; Robert E. Watson, and Kent W. Simcoe, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 469,727, May 30, 1974, Pat. No. 4,012,725, which is a continuation of Ser. No. 269,899, Jul. 7, 1972, abandoned. This application Jan. 19, 1977, Ser. No. 760,802
Int. Cl.[2] G06F *15/02, 11/00, 3/04, 13/00*
U.S. Cl. 364—900 **11 Claims**



1. An electronic calculator comprising:

keyboard input means having processing control means and having a plurality of alphameric keys for entering lines of alphameric information into the calculator, each of said alphameric keys also being representative, either alone or in combination with another one or more of said alphameric keys, of an ASCII character;

buffer storage means, coupled to said keyboard input means, for storing a line of alphameric information entered into the calculator;

memory means, coupled to said keyboard input means and buffer storage means, for storing a program of one or more lines of alphameric information entered into the calculator from said keyboard input means; and

processing means, coupled to said keyboard input means, buffer storage means, and memory means, said processing means being responsive to actuation of said processing control means for selectively executing either a line of alphameric information then stored in said buffer storage means or a program comprising one or more lines of alphameric information then stored in said memory means;

said processing means including logic means coupled to said keyboard input means and responsive to actuation of predetermined ones of said plurality of alphameric keys, singly or in combination, for generating any one or more of the 256 possible 8-bit binary codes of the ASCII character set and for storing those binary codes as they are generated in said buffer storage means.

4,126,899

JUNCTION FIELD EFFECT TRANSISTOR RANDOM ACCESS MEMORY

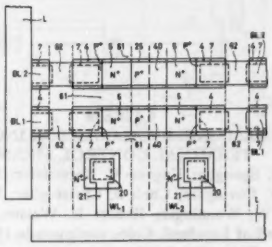
Jan Lohstroh, Eindhoven, Netherlands; Joannes J. M. Koomen; Roelof H. W. Salters, both of Sunnyvale, Calif., and Cornelis M. Hart, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 11, 1977, Ser. No. 814,648

Claims priority, application Netherlands, Dec. 17, 1976, 7613999; Jan. 28, 1977, 7700880

Int. Cl.[2] G11C *11/40*

U.S. Cl. 365—182 **22 Claims**



1. A semiconductor device for a random access memory (RAM) comprising

a plurality of memory cells arranged in rows and columns in a semiconductor body and each comprising one junction field effect transistor spaced apart having source and drain main electrodes, a channel extending between and connecting said source and drain main electrodes and two gate electrodes adjoining the channel, each of said gate electrodes forming a rectifying junction with said channel for controlling the conductivity of the channel;

selection means comprising selection lines, including one bit line and one word line for each memory cell, a first main electrode of a memory cell transistor being connected to a respective bit line common to a column of transistors, and a first gate electrode being connected to a word line common to a row of transistors, a second gate electrode of such memory cell transistor being at a floating potential, which represents information under the control of the voltages used for selection of said memory cell transistors; and

control means for supplying selection voltages to the word lines and bit lines for selecting said memory cell transistor to selectively perform, one at a time, the functions of erasing information contained in said selected transistor, writing new information into said selected transistor, and reading out information from said selected transistor, depending upon the voltage levels on the word lines and bit lines, the second main electrode of said transistor being connected to an electrode common to the memory cell transistors.

4,126,900

RANDOM ACCESS JUNCTION FIELD-EFFECT FLOATING GATE TRANSISTOR MEMORY

Joannes J. M. Koomen, Sunnyvale, Calif.; Jan Lohstroh, Eindhoven, Netherlands; Roelof H. W. Salters, Sunnyvale, Calif., and Adrianus T. Van Zanten, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

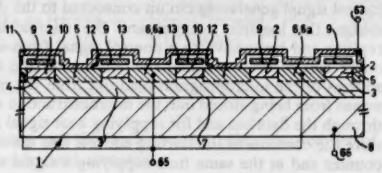
Filed Jul. 11, 1977, Ser. No. 814,643

Claims priority, application Netherlands, Jan. 28, 1977, 7700879

Int. Cl.[2] G11C *11/40*

U.S. Cl. 365—185 **21 Claims**

1. A semiconductor device comprising several memory sites arranged within a semiconductor body in a matrix and each having a semiconductor zone of a first conductivity type extending in a region of the second, opposite conductivity type and forming a first semiconductor junction with said zone, said semiconductor zone serving to store information-representing charge, said stored charge being separated from the remaining part of the semiconductor body by a first depletion layer associated with said first semiconductor junction and present between the zone and the region, means forming source and drain main electrode regions of a junction field effect transistor structure, which main electrode regions are separated from each other by a channel region adjoining said first depletion



layer, the resistance to current passage through the channel region between the main electrode regions of the junction field effect transistor structure being controllable by the information content of the memory site, means forming a second depletion layer, by the thickness of which said resistance between the main electrode regions can also be influenced, adjoining the channel region, and an access electrode, which is common to a number of memory sites of the matrix, coupled capacitively to the semiconductor zone and isolated therefrom by an intermediate insulating layer.

4,126,901

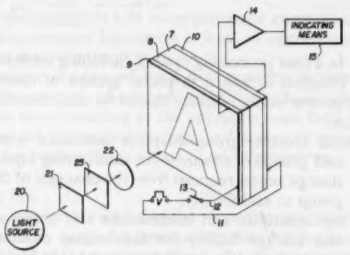
PHOTOVOLTAIC-FERROELECTRIC CORRELATION DEVICES

Philip S. Brody, Brookmont, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 824,894, Aug. 15, 1977, Pat. No. 4,051,465, which is a continuation-in-part of Ser. No. 533,365, Dec. 16, 1974, Pat. No. 3,855,004. This application Apr. 5, 1978, Ser. No. 893,568

Int. Cl.[2] G11C *11/42, 13/04*

U.S. Cl. 365—120 **12 Claims**



7. A photovoltaic-ferroelectric correlation device for correlating patterns, comprising,

a layer of photovoltaic-ferroelectric material and a layer of photoconductive material sandwiched between two electrodes, said sandwich having an array of cavities therein,

means for inducing a remanent polarization pattern in said array of cavities comprising means for applying a voltage across said sandwich and first illumination means for illuminating said cavities with a first illumination pattern while said voltage is applied,

second illumination means for illuminating said cavities after said voltage is removed with a second pattern to be correlated with said first pattern,

means for collecting the photocurrent induced in each cavity which photocurrent is proportional to the product of said remanent polarization and the intensity of said second illumination, and

means for providing an indication of the total current from all of said cavities, which is proportional to the correlation of said two patterns.

said composite polarization light intensity of said second pattern on the ...
means for providing indication of the total correspondence of all of said ... which is proportional to the ... of said ...

second illumination means for illuminating said ... after said ... is removed with a second pattern to be correlated with said first pattern;
means for collecting the photoemission induced in each ... by which photoemission is proportional to the product of

DESIGNS PATENTS

GRANTED Nov. 21, 1978

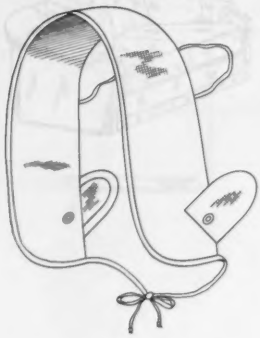
ERRATA

For CLASS	See PATENT NO.
D23–016	250,350

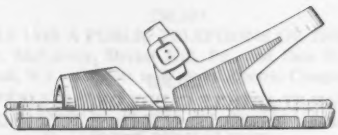
DESIGNS

NOVEMBER 21, 1978

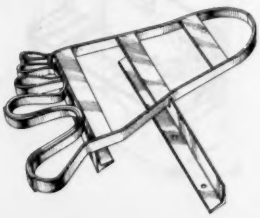
250,296
VISOR FOR USE WITH A HAIR DRYER
Annie M. Breland, 1365 Willoughby Rd., Birmingham, Ala. 35216
Filed Jun. 13, 1977, Ser. No. 806,007
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—247



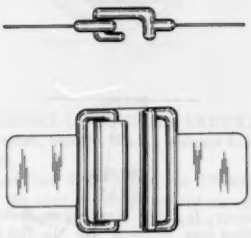
250,297
SHOE
Victor F. Anderson, Wenonah, N.J., assignor to Shell Oil Company, Houston, Tex.
Filed Apr. 12, 1976, Ser. No. 676,164
Term of patent 3½ years
Int. Cl. D2—*04*
U.S. Cl. D2—293



250,298
COMBINED BOOTJACK AND SCRAPER
Lester O. Dowler, 9866 Williams Ct., Thornton, Colo. 80229
Filed Nov. 15, 1976, Ser. No. 741,808
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—378.2

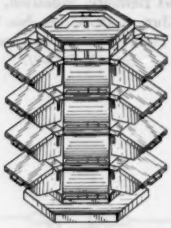


250,299
BRASSIERE FASTENER
Ross F. Rowell, 5361 Belmore, Montreal, Quebec, Canada
Filed Jun. 4, 1976, Ser. No. 693,201
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—409

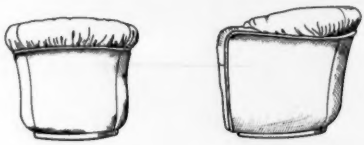


250,300
COMBINED CHAIR AND PARASOL THEREFOR
Eduard Rohr, Magenwil, Switzerland, assignor to Wibe Treuhand AG, Sarmenstorf, Switzerland
Filed Apr. 9, 1976, Ser. No. 675,302
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—4

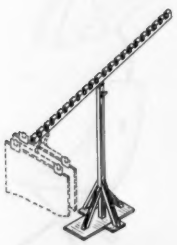
250,301
ROTATABLE STORAGE BIN ASSEMBLY
Milton E. Handler, Northbrook, and Richard Sylvan, Glenview, both of Ill., assignors to Hirsh Company
Filed Mar. 7, 1977, Ser. No. 774,672
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—24



250,302
SEAT
Warren E. Harvey, Jr., 2818 Washington, Julian, Calif. 90236
Filed Nov. 10, 1976, Ser. No. 740,566
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26

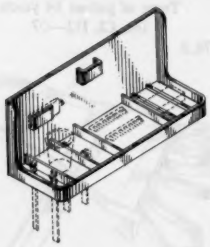


250,303
DISPLAY RACK
Steven I. Haber, 2522 Heights, Lansing, Mich. 48912
Filed Oct. 20, 1976, Ser. No. 734,113
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—28



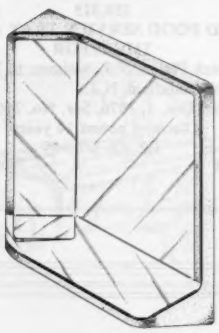
250,304
SEAT OR SIMILAR ARTICLE
Stanley P. Nash, Johnson Creek, Wis., assignor to Schweiger Industries, Inc., Jefferson, Wis.
Filed Nov. 26, 1976, Ser. No. 745,352
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—63

250,305
TOILET ARTICLE CADDY OR THE LIKE
John Primlano, deceased, late of Elmhurst, N.Y., by Grace C. Primlano, administrator, 86-02 57th Rd., Elmhurst, N.Y. 11373
Filed Apr. 9, 1976, Ser. No. 675,525
Term of patent 14 years
Int. Cl. D23—*02;* D6—*04*
U.S. Cl. D6—86

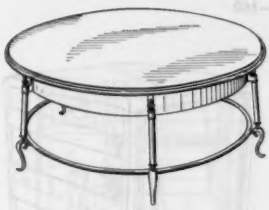


250,306
SUSPENDIBLE SUPPORT FOR POTTED PLANTS OR THE LIKE
Peter Momcilovich, 6515 58th NE., Seattle, Wash. 98115
Filed Dec. 13, 1976, Ser. No. 750,384
Term of patent 14 years
Int. Cl. D6—*06, 04*
U.S. Cl. D6—113

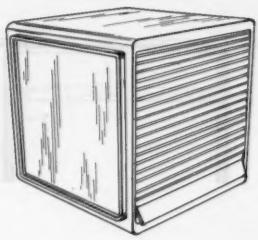
250,307
SHELF FOR A PUBLIC TELEPHONE OR THE LIKE
John N. McGarvey, Drexel Hill, Pa., and Dale F. Milsark, Summit, N.J., assignors to Western Electric Company, Incorporated
Filed Oct. 29, 1976, Ser. No. 737,112
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—133



250,308
COCKTAIL TABLE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Jan. 12, 1977, Ser. No. 758,683
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

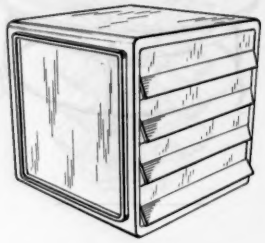


250,309
CABINET OR SIMILAR ARTICLE
Robert A. Chervenak, Seattle, Wash., assignor to Comerco, Inc., Tacoma, Wash.
Filed Nov. 8, 1976, Ser. No. 739,999
The portion of the term of this patent subsequent to Sep. 19, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—150

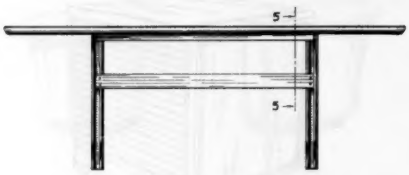


250,310
DOUBLE DESK OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Jan. 12, 1977, Ser. No. 758,684
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—159

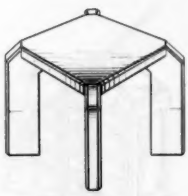
250,311
CABINET OR SIMILAR ARTICLE
Robert A. Chervenak, Seattle, Wash., assignor to Comerco, Inc., Tacoma, Wash.
Filed Nov. 8, 1976, Ser. No. 740,000
The portion of the term of this patent subsequent to Sep. 19, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—160



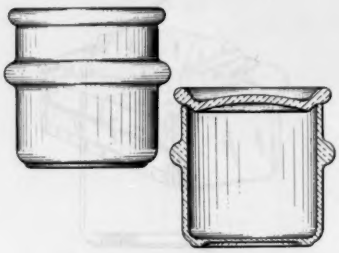
250,312
TABLE OR THE LIKE
Joseph Z. Duke; Walter S. Ring, and Robin W. Shepherd, all of P.O. Box 4384, Jacksonville, Fla. 32201
Filed Oct. 20, 1976, Ser. No. 734,022
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



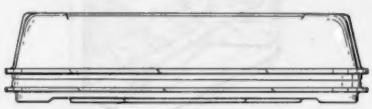
250,313
CONCRETE TABLE
James E. Miller, 12900 W. Ten Mile Rd., South Lyon, Mich. 48178
Division of Ser. No. 698,167, Jun. 21, 1976. This application Oct. 17, 1977, Ser. No. 842,495
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



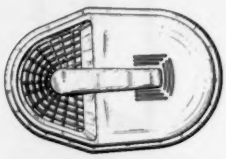
250,314
CUP WITH COVER
Inger M. Elliott, and Helena Uglow, both of New York, N.Y., assignors to China Seas, Inc., New York, N.Y.
Filed Feb. 24, 1977, Ser. No. 771,832
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—6



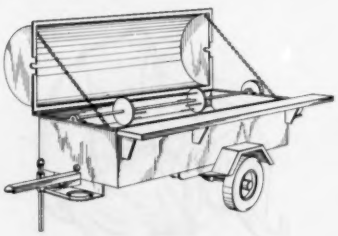
250,315
INSULATED FOOD SERVICE TRAY AND COVER THEREFOR
Edgar Otto, Scotch Plains, N.J., assignor to Therma-Tray Corporation, South Plainfield, N.J.
Filed Dec. 1, 1976, Ser. No. 746,231
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—38



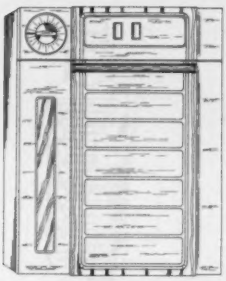
250,316
COFFEEMAKER
David L. Painter, Glenview, Ill., and Daniel E. Gremonprez, West Bend, Wis., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Dec. 27, 1976, Ser. No. 754,487
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—41



250,317
MOBILE BROILER ROTISSERIE
James Simmons, P.O. Box 312, 5044 St. Joseph Ave., Stevensville, Mich. 49127
Filed Apr. 14, 1977, Ser. No. 787,579
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—108

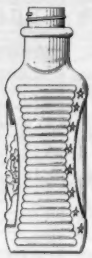


250,318
MICROWAVE OVEN
John J. Pink, 519 33rd St. NE., Cedar Rapids, Iowa 52402
Continuation of Ser. No. 626,092, Oct. 28, 1975, abandoned.
This application Apr. 4, 1977, Ser. No. 784,647
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



250,319
BOTTLE
Lucien O. Frohling, North Caldwell, N.J., assignor to General Foods Corporation, White Plains, N.Y.
Filed Sep. 22, 1976, Ser. No. 726,016
The portion of the term of this patent subsequent to Dec. 21, 1990, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—67

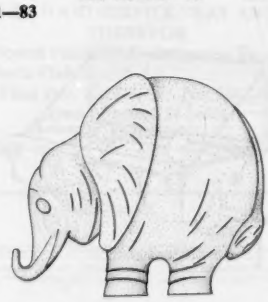
250,320
BOTTLE
Lucien O. Frohling, North Caldwell, N.J., assignor to General Foods Corporation, White Plains, N.Y.
Filed Sep. 22, 1976, Ser. No. 726,021
The portion of the term of this patent subsequent to Dec. 21, 1990, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—67



250,321
BOTTLE
Lucien O. Frohling, North Caldwell, N.J., assignor to General Foods Corporation, White Plains, N.Y.
Filed Sep. 22, 1976, Ser. No. 726,022
The portion of the term of this patent subsequent to Dec. 21, 1990, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—67

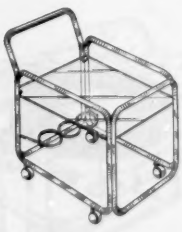
250,322
PACKAGED SET OF SWIMMING FINS, MASK AND SNORKEL
Simon C. Fireman, 79 Dimmock St., Quincy, Mass. 02169
Filed Jan. 10, 1977, Ser. No. 757,948
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—192

250,323
JEWELRY CHARM
Arq. Miguel A. Fuentes-Gurza, Escobedo Sur. 733, Suite 201, Monterrey, N. L., Mexico
Filed Jun. 4, 1976, Ser. No. 692,667
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—83

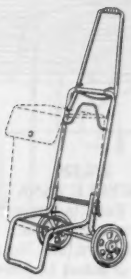


250,324
PLAQUE
Barbara Alevizon, 1206 E. Melody La., Fullerton, Calif. 92631, and Peter Adler, 8650 Franklin Ave., Los Angeles, Calif. 90008
Filed Jun. 13, 1977, Ser. No. 806,186
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—139

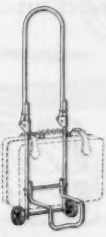
250,325
CART
Thea Blatzer, Lichtenfels; Wilfried Ender; Gerhard Ketnath, both of Neuensee, and Erich Krämer, Michelau, all of Fed. Rep. of Germany, assignors to Andreas Hofmann Metallwarenfabriken
Filed Apr. 21, 1977, Ser. No. 789,557
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—29



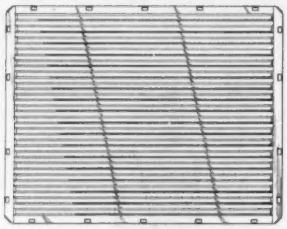
250,326
CART
Thea Blatzer, Lichtenfels; Wilfried Ender, and Gerhard Ketnath, both of Neuensee, all of Fed. Rep. of Germany, assignors to Firma Andreas Hofmann Metallwarenfabrik
Filed Apr. 28, 1977, Ser. No. 792,020
Term of patent years
Int. Cl. D12—*02*
U.S. Cl. D12—34



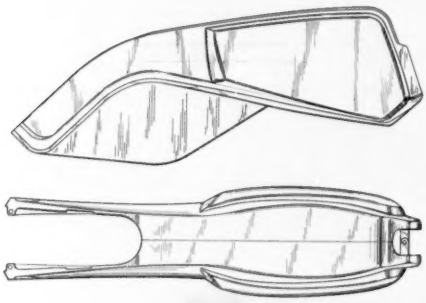
250,327
CART
Thea Blatzer, Lichtenfels; Wilfried Ender, and Gerhard Ketnath, both of Neuensee, all of Fed. Rep. of Germany, assignors to Firma Andreas Hofmann Metallwarenfabrik
Filed Apr. 28, 1977, Ser. No. 792,021
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—34



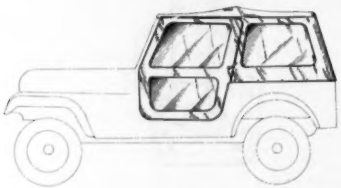
250,328
TRUCK PLATFORM
Leonard E. Wright, 4534 E. Quartz, Mountain Rd., Paradise Valley, Ariz. 85253
Filed Jun. 13, 1977, Ser. No. 805,653
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—93



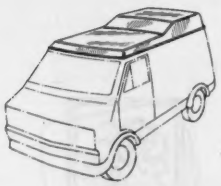
250,329
BICYCLE TANK
John D. Breen, Antioch, Tenn., assignor to The Murray Ohio Manufacturing Co., Brentwood, Tenn.
Filed May 18, 1976, Ser. No. 687,507
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—126



250,330
VEHICLE TOP
Kim M. Hickman, Colorado Springs, and Ralph C. Young, Littleton, both of Colo., assignors to White Automotive Corp., Colorado Springs, Colo.
Filed Jun. 11, 1976, Ser. No. 695,163
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



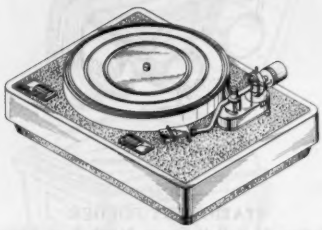
250,331
VAN TOP
Stanley G. Snyder, 1993 Belmont Ct., El Cajon, Calif. 92020
Filed Nov. 30, 1977, Ser. No. 855,925
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



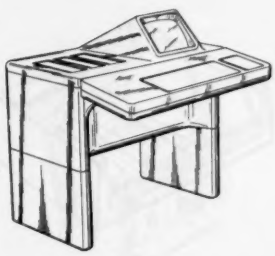
250,332
REAR-VIEW MIRROR FOR VEHICLE
Tetsuo Aiga, 2674-4 Kami-hongo, Matsudo-shi, Chiba-ken, Japan
Filed Nov. 16, 1976, Ser. No. 742,089
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187

250,333
RECORD TURNTABLE
Tiarko Meunier, Mennecy (Essonne), France, assignor to Thomson-Brandt, Paris, France
Filed Jan. 6, 1976, Ser. No. 646,890
Claims priority, application France, Jul. 7, 1975, 74 007
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—17

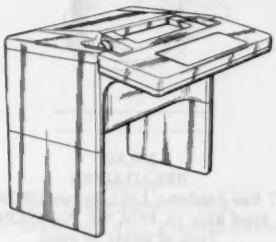
250,334
RECORD TURNTABLE
Tiarko Meunier, Mennecy (Essonne), France, assignor to Thomson-Brandt, Paris, France
Filed Mar. 31, 1976, Ser. No. 672,480
Claims priority, application France, Dec. 16, 1975, 74 404
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—17



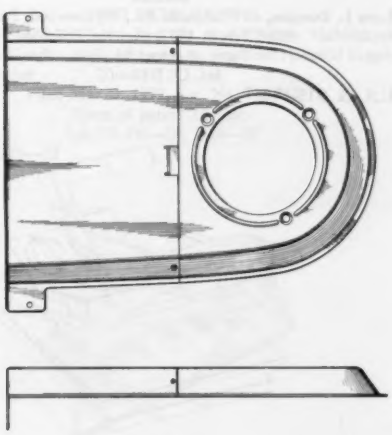
250,335
CONTROL DESK
Hartmut Esslinger; Andreas Haug, and Georg Spreng, all of Altensteig, Fed. Rep. of Germany, assignors to Diehl Datensysteme GmbH, Nuremberg and CTM Computertechnik Müller GmbH, Constance, both of Fed. Rep. of Germany
Filed Aug. 18, 1977, Ser. No. 825,841
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1977, 11828
Term of patent 7 years
Int. Cl. D14—*02*; D13—*03*
U.S. Cl. D14—43



250,336
CONTROL DESK
Hartmut Esslinger; Andreas Haug, and Georg Spreng, all of Altensteig, Fed. Rep. of Germany, assignors to Diehl Datensysteme GmbH, Nuremberg and CTM Computertechnik Müller GmbH, Constance, both of Fed. Rep. of Germany
Filed Aug. 18, 1977, Ser. No. 825,842
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1977, 11828
Term of patent 7 years
Int. Cl. D14—*02*; D13—*03*
U.S. Cl. D14—44

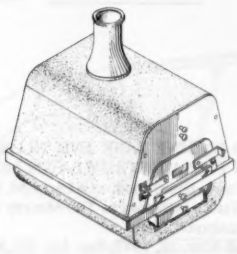


250,337
COMBINED ENGINE BASE AND TRANSMISSION COVER FOR A ROTARY LAWN MOWER
Richard D. Williams, Brentwood, and Larry M. Cognata, Nashville, both of Tenn., assignors to The Murray Ohio Manufacturing Co., Brentwood, Tenn.
Filed Mar. 28, 1977, Ser. No. 781,956
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—17

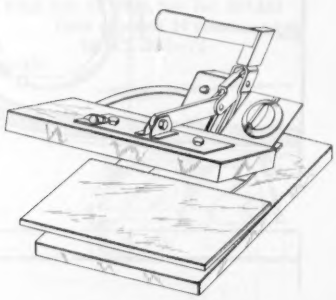


250,338
COMBINED SPOOL AND BOBBIN HOLDER
Howard N. LaPierre, 14634 Hawes St., Whittier, Calif. 90604
Filed Oct. 7, 1976, Ser. No. 730,063
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—78

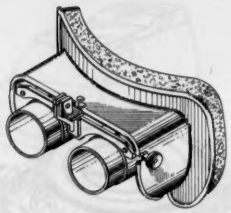
250,339
BREAD-OVEN
Guy Selva, 7 Rue Vendome, Lyon, France (69006)
Filed May 10, 1976, Ser. No. 685,010
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D15—108



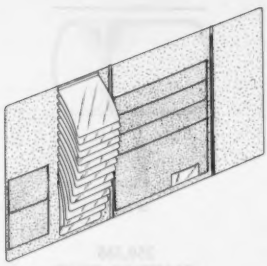
250,340
PRESS
Leon L. Douglas, 407 Lakeside Rd., Wynnewood, Pa. 19096
Filed Feb. 9, 1977, Ser. No. 767,054
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D15—146



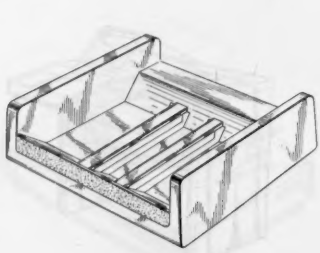
250,341
COMBINED MASK AND OPTICS SUPPORTING TUBE ASSEMBLY FOR NIGHT VISION BINOCULARS
Edgar M. McClure, 5238 Peters Creek Rd., NW., Roanoke, Va. 24019
Filed Oct. 18, 1976, Ser. No. 736,447
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—59



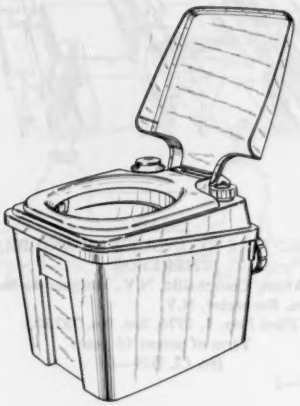
250,342
STATIONERY FOLDER
Keith R. Testro, 22 Kellett Grove, North Kew, Victoria 3102, and Rex C. Testro, 56 Campbell St., East Kew, Victoria 3102, both of Australia
Filed Nov. 12, 1976, Ser. No. 741,534
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—26



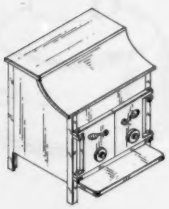
250,343
CARD FILE
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougal, Inc., Roseland, N.J.
Filed Apr. 16, 1976, Ser. No. 677,813
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



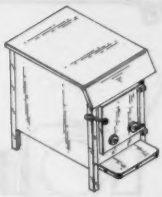
250,344
TOILET
Frank T. Sargent, and John M. Antos, both of Ann Arbor, Mich., assignors to Thetford Corporation, Ann Arbor, Mich.
Filed Jun. 8, 1977, Ser. No. 804,759
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



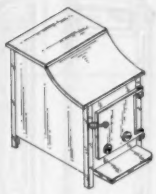
250,345
WOODBURNING STOVE
Martin Leach, Grandview Ave., Cornwall-on-Hudson, N.Y. 12520
Filed Jun. 20, 1977, Ser. No. 808,322
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



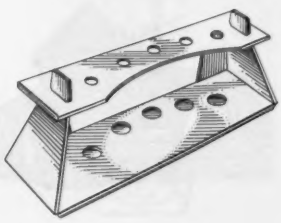
250,346
WOODBURNING STOVE
Martin Leach, Grandview Ave., Cornwall-on-Hudson, N.Y. 12520
Filed Jun. 20, 1977, Ser. No. 808,323
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



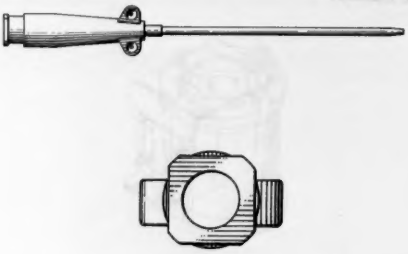
250,347
WOODBURNING STOVE
Martin Leach, Grandview Ave., Cornwall-on-Hudson, N.Y. 12520
Filed Jun. 20, 1977, Ser. No. 808,324
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



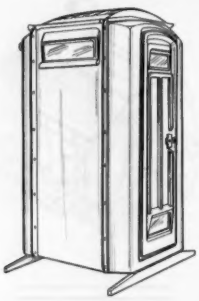
250,348
TEST TUBE RACK
Michael Frangiosa, Chaddsford, Pa., and William McMichael, Haddon Heights, N.J., assignors to American Hospital Supply Corporation
Filed Mar. 3, 1977, Ser. No. 773,981
Term of patent 14 years
Int. Cl. D6—*04*; D24—*02*
U.S. Cl. D24—32



250,349
CATHETER
Richard H. McFarlane, 506 Tyler Rd., St. Charles, Ill. 60174
Filed Mar. 15, 1977, Ser. No. 777,622
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54

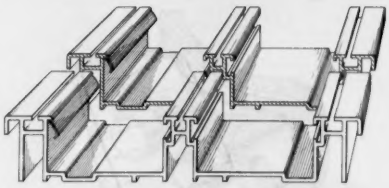


250,350
PORTABLE TOILET BUILDING
Frank T. Sargent, and Samuel C. Crosby, both of Ann Arbor, Mich., assignors to Thetford Corporation, Ann Arbor, Mich.
Filed Sep. 19, 1977, Ser. No. 834,530
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D22—16

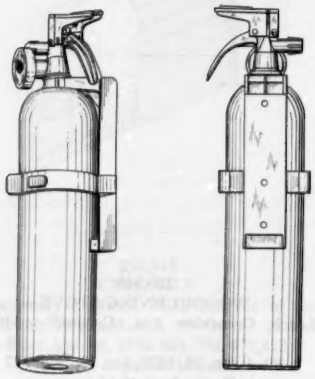


250,351
BUILDING FACADE
Michael J. Shewchuk, Jr., 53245 N. Ironwood, South Bend, Ind. 46635
Continuation-in-part of Ser. No. 441,803, Feb. 12, 1974, abandoned. This application Mar. 15, 1976, Ser. No. 666,891
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—59

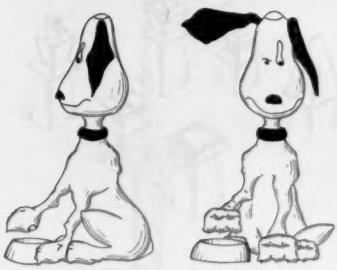
250,352
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, Levis, Canada, assignor to P.H.-Tech Inc., Canada
Filed Mar. 22, 1977, Ser. No. 780,075
Claims priority, application Canada, Sep. 22, 1976, 2209762
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



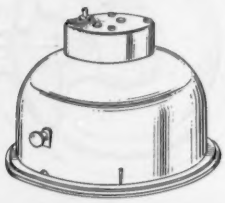
250,353
COMBINED FIRE EXTINGUISHER AND BRACKET THEREFOR
Richard H. Avant, Churchville, N.Y., assignor to Bernzomatic Corporation, Rochester, N.Y.
Filed Nov. 1, 1976, Ser. No. 737,883
Term of patent 14 years
Int. Cl. D29—*01*
U.S. Cl. D29—2



250,354
ANIMAL FEEDER
Robert G. Cameron, Jr., 184 Walter Rd., Chalfont, Pa. 18914
Filed Sep. 29, 1977, Ser. No. 837,758
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15



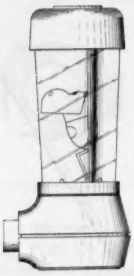
250,355
INCUBATOR FOR HATCHING EGGS
Albert F. Marsh, 14232 Brookhurst St., Garden Grove, Calif. 92643
Filed May 7, 1976, Ser. No. 684,297
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



250,356
GOLF CLUB SHAFT
Eugene Kaugars, Torrington, Conn., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jul. 26, 1976, Ser. No. 708,842
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GS

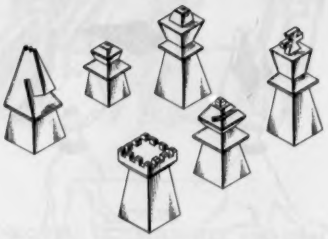
250,357
AMUSEMENT TOY
Takao Matsumoto, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Mar. 17, 1977, Ser. No. 778,721
Claims priority, application Japan, Oct. 29, 1976, 51/42782
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 LL

250,358
AMUSEMENT TOY
Takao Matsumoto, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Mar. 17, 1977, Ser. No. 778,722
Claims priority, application Japan, Oct. 29, 1976, 51/42781
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 LL

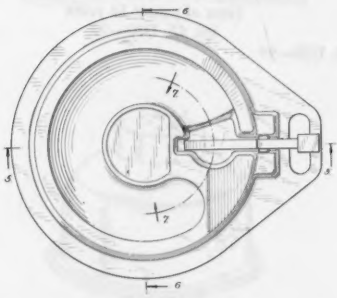


250,359
AMUSEMENT TOY
Takao Matsumoto, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Mar. 17, 1977, Ser. No. 778,725
Claims priority, application Japan, Oct. 29, 1976, 51/42780
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 LL

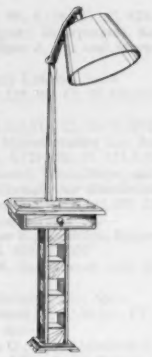
250,360
CHESS SET
Robert W. Shone, 205 Civic Center Dr., Santa Ana, Calif. 92701
Filed Mar. 25, 1977, Ser. No. 781,442
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CH



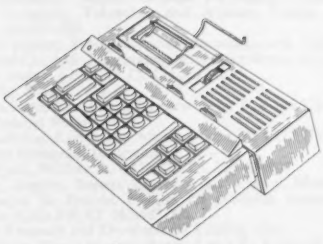
250,361
BALL TOSSING DEVICE
Ian R. James, 105 Surrey Dr., Glen Ellyn, Ill. 60137
Filed Jul. 18, 1977, Ser. No. 816,312
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 R



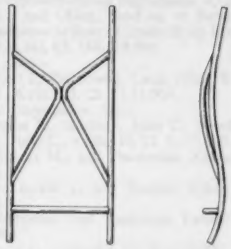
250,362
COMBINED TABLE AND FLOOR LAMP
Wilfred J. Williams, 78 Seacliff Dr. West, Leamington, Ontario N8H 3Y2, Canada
Filed Nov. 3, 1976, Ser. No. 738,624
Term of patent 14 years
Int. Cl. D26—*05;* D6—*03*
U.S. Cl. D48—20 D



250,363
DESK TOP CALCULATOR
Mario Bellini, via Cavalieri del S. Sepolcro, n° 12, 20121 Milan, Italy
Filed Oct. 26, 1976, Ser. No. 735,206
Claims priority, application Italy, Apr. 27, 1976, 53180-B/76
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 B



250,364
KNAPSACK FRAME
Edward G. Byrne, Cape Town, South Africa, assignor to Sit 'N Sun Products (Proprietary) Limited, Lansdowne, South Africa
Filed Jan. 4, 1977, Ser. No. 756,692
Claims priority, application South Africa, Jul. 16, 1976, 76/0858
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



250,365
HANDBAG
Rikuzo Suzuki, 30-5, 3 chome, Jingumae, Shibuyaku, Tokyo, Japan
Filed Jan. 6, 1975, Ser. No. 538,776
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF NOVEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Traylor, Francis T.; Vatalaro, Frank J.; and Benear, Bert, 4,126,406, Cl. 417-373.000.
Benedetto-Castro, Luis-Alberto: *See*—
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Bepex Corporation: *See*—
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Wolinski, Leon E.; and Berezuk, Peter D., 4,126,504, Cl. 156-310.000.
Berg, David A., to Allis-Chalmers Corporation. Hydraulic filter and valve arrangement. 4,126,553, Cl. 210-130.000.
Berger, Engelbert: *See*—
Bader, Dietrich; Berger, Engelbert; Ohnemuller, Dieter; and Reiprich, Sieghard, 4,126,803, Cl. 313-55.000.
Berges, David A., to SmithKline Corporation. 7-Acyl-3-(carboxyalkyl and carbamoylalkyl substituted oxadiazolylthiomethyl) cephalosporins and antibacterial compositions and methods employing them. 4,126,682, Cl. 424-246.000.
Bernatt, Joseph; and Vojta, Karel, to S&C Electric Company. Polyphase disconnecting switch arrangement. 4,126,773, Cl. 200-146.00R.
Bertin, Joseph E.: *See*—
Guignard, Gelas S.; and Bertin, Joseph E., 4,126,165, Cl. 142-56.000.
Bertovich, Matthew G.: *See*—
El Taher, Mohamed A.; and Bertovich, Matthew G., 4,126,218, Cl. 198-325.000.
Bertram, Claus, to O & K Orenstein & Koppel Aktiengesellschaft. Valve piston for hydraulic control valve. 4,126,155, Cl. 137-625.690.
Bevilacqua, Frank; Dietrich, Joseph R.; Flinn, William S.; Groves, Malcolm D.; and West, John M., to Combustion Engineering, Inc. Bottom actuated reactor control system. 4,126,767, Cl. 176-36.00R.
Beyler, Roland: *See*—
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Palmer, Melvin J., 4,126,348, Cl. 294-88.000.
Black Clawson, Inc.: *See*—
Burk, John H., 4,126,280, Cl. 241-275.000.
Black, Donald S., to Palmer Engineering Company Ltd. Method and apparatus for formation fracturing with foam having greater proppant concentration. 4,126,181, Cl. 166-280.000.
Blad, Leiv H., to Lockheed Aircraft Corporation. Method of making a hollow article. 4,126,659, Cl. 264-90.000.
Blankenhorn, Gerhard: *See*—
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Blay, Alan G.: *See*—
LeMay, Christopher Archibald G.; and Blay, Alan G., 4,126,786, Cl. 250-445.00T.
Blazey, Richard N.; and Petrie, Sarah E., to Eastman Kodak Company. Acoustooptic material. 4,126,385, Cl. 350-358.000.
Bleh, Otto W., deceased: *See*—
Bunger, Heinrich; and Bleh, Otto W., deceased, 4,126,755, Cl. 560-77.000.
Bleh, Rita M., heiress: *See*—
Bunger, Heinrich; and Bleh, Otto W., deceased, 4,126,755, Cl. 560-77.000.
Block Drug Company, Inc., Reed & Carnrich Division: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,126,700, Cl. 424-319.000.
Block, Robert S.: *See*—
Martin, John R.; and Block, Robert S., 4,126,762, Cl. 179-2.00A.
Blohm, Thomas R.: *See*—
Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., 4,126,611, Cl. 260-239.00B.
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Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., 4,126,621, Cl. 260-329.0AM.
Blosser, Carl J., to GTE Automatic Electric Laboratories Incorporated. Cable reel restraining apparatus. 4,126,211, Cl. 188-32.000.
Bobo, Melvin; Heyser, James W.; Shotts, L. D.; and Wisbey, Raymond W., to General Electric Company. Turbine nozzle. 4,126,405, Cl. 415-115.000.
Bock, Oscar. Golf ball vending machine. 4,126,217, Cl. 194-93.000.
Boeing Co., The: *See*—
Crawley, R. W., 4,126,212, Cl. 188-317.000.
Boerzel, Paul: *See*—
Hoene, Richard; Bankowsky, Heinz-Hilmar; Hartmann, Eduard; Schenck, Hans-Uwe; and Boerzel, Paul, 4,126,739, Cl. 526-272.000.
Bohm, Manfred, to International Standard Electric Corporation. Ground station for a round-trip-path distance-measuring system. 4,126,859, Cl. 343-5.0LS.
Boise Cascade Corporation: *See*—
Hoelzinger, Walther J., 4,126,508, Cl. 156-512.000.
Bok, Johannes G.; Roelevink, Bauke J.; and van Werkhoven, Jan, to U.S. Philips Corporation. Flash array provided with a high voltage combustion flash lamp. 4,126,409, Cl. 431-359.000.
Bolduc, Lee R.; and Dickhudt, Eugene A., to Population Research Incorporated. Dispensing instrument. 4,126,134, Cl. 128-235.000.
Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,126,274, Cl. 239-664.000.
Borbely, Alexander S., to P. R. Mallory & Co. Inc. Process for treating silver oxide. 4,126,584, Cl. 252-518.000.
Borg-Warner Corporation: *See*—
Gaylord, Norman G., 4,126,738, Cl. 526-271.000.
Borm, David S., to International Business Machines Corporation. Probe with contact indicating means. 4,126,380, Cl. 350-266.000.
Borman, Willem F. H.; and Liberti, Frank N., to General Electric Company. Process for the preparation of polyesters having stabilized melt viscosity in the presence of aromatic poly(carbonates). 4,126,592, Cl. 260-22.00M.
Borys, Chester E.: *See*—
Subwick, Norbert A., 4,126,251, Cl. 222-326.000.
Boston University, The Trustees of: *See*—
Sears, Barry D., 4,126,416, Cl. 23-230.00B.
Bottcher, Kurt; and Metz, Peter. Boiler with horizontal boiler sections. 4,126,105, Cl. 122-214.000.
Bottner, Manfred; and Schluter, Wilhelm, to Hoesch Werke Aktiengesellschaft. Large antifriction bearing composed of segments. 4,126,361, Cl. 308-174.000.
Boulogne, Jean; and Papantoniou, Christos, to L'Oreal. Nail polishes. 4,126,675, Cl. 424-61.000.
Boulton, Thomas W., to Imperial Chemical Industries Limited. Monopolar electrolytic cell electrodes. 4,126,534, Cl. 204-266.000.
Bourboulis, Cedric D. Heat distribution device. 4,126,120, Cl. 126-215.000.
Bowman, Jan, to Kaiser Aluminum & Chemical Corporation. Production of periclase grain. 4,126,478, Cl. 106-58.000.
Boyd, Raymond. Lighted compact. 4,126,145, Cl. 132-83.00R.

Braas & Co., GmbH: *See—*
Vitt, Josef, 4,126,721, Cl. 428-339.000.
Brach, Ulrich, to Zeller Plastik. Tamper indicating closure. 4,126,240, Cl. 215-252.000.
Bradley, Robert W.: *See—*
Wagor, John C.; and Bradley, Robert W., 4,126,066, Cl. 82-4.00A.
Bradstock, Richard L., to Adams Rite Manufacturing Co. Motor driven lock actuator. 4,126,341, Cl. 292-201.000.
Brandes, Lewis H., to Corning Glass Works. Method of densifying metal oxides. 4,126,422, Cl. 23-293.00R.
Brannegan, Daniel P.: *See—*
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Braun, Hans-Rudiger; Rosenbauer, Hans-Gunter; Coin, Andre; and Davril, Roland, to Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft; and Societe Auxiliaire d'Entreprises. Light concrete and method of preparing the same. 4,126,470, Cl. 106-95.000.
Bredeweg, Corwin J.: *See—*
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Brendley, William H.: *See—*
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Brennan, Adrian C.: *See—*
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Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., to Pfizer Inc. Preparation of gamma-pyrones from 3-substituted furans. 4,126,624, Cl. 260-345.90R.
Breslow, Jeffrey D.: *See—*
Hicks, Alan A.; Breslow, Jeffrey D.; and Jaworski, Eugene, 4,126,309, Cl. 273-95.00R.
Bressanelli, Jerome P.: *See—*
Costello, Thomas M.; and Bressanelli, Jerome P., 4,126,447, Cl. 75-122.000.
Briers, Peter A.; and Lowe, William T., to British Leyland UK Limited. Motor vehicles. 4,126,350, Cl. 296-28.00C.
Brisebarre, Marcel; and Repetti, Pierre, to Systems and Technics S.A. Method of giving change automatically and a coin dispenser. 4,126,147, Cl. 133-5.00R.
British Gas Corporation: *See—*
Eales, David F., 4,126,427, Cl. 48-62.00R.
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Briers, Peter A.; and Lowe, William T., 4,126,350, Cl. 296-28.00C.
Brodrene Gram A/S: *See—*
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Brody, Philip S., to United States of America, Army. Photovoltaic-ferroelectric correlation devices. 4,126,901, Cl. 365-120.000.
Broersma, Harmen, to Microtel B.V. Moving armature transducer with reinforced and pivoted diaphragm. 4,126,769, Cl. 179-115.00A.
Bromer, Gunter, to Siemens Aktiengesellschaft. Numerically controlled nibbling machine. 4,126,068, Cl. 83-237.000.
Brooks, Philip L., to Raychem Corporation. Coupling means. 4,126,759, Cl. 174-94.00R.
Broome, Barry G.; and Margolin, George D. Microform reader. 4,126,387, Cl. 353-77.000.
Bross, Charles F., to Pennwalt Corporation. Bolus orienter. 4,126,219, Cl. 198-382.000.
Bross, Theodore D. Solar hot water booster and exchanger for use therein. 4,126,122, Cl. 126-271.000.
Brothers, Abe R. Razor blade arrangement. 4,125,939, Cl. 30-50.000.
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Brown, Cicero C., deceased; and by Brown, Joe R., executor. Mobile drilling apparatus. 4,126,193, Cl. 175-171.000.
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Brown, Cicero C., deceased; and Brown, Joe R., executor, 4,126,193, Cl. 175-171.000.
Brown, Patrick M.: *See—*
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Brown, Philip S.; and Harman, Douglas G., to Westinghouse Electric Corp. Apparatus for hydraulically expanding a tube. 4,125,937, Cl. 29-727.000.
Brown, Robert G.: *See—*
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Brown, Robert W., to Xerox Corporation. Electrostatic developer material. 4,126,566, Cl. 252-62.10P.
Brown, William J.; and Kelly, Orson K., to Caterpillar Tractor Co. Control lever assembly. 4,126,056, Cl. 74-491.000.
Browning, Willard A. Collapsible trailer. 4,126,324, Cl. 280-42.000.
Bruening, Robert A., to Chicago Bridge & Iron Company. Tank floating roof seal. 4,126,243, Cl. 220-224.000.
Bruges, Jean-Claude, to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull. Ventilated enclosure. 4,126,269, Cl. 236-49.000.
Bruno, James E.: *See—*
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Marcus, James T.; and Kennard, Harry M., 4,126,560, Cl. 210-489.000.
Bryan, Charles: *See—*
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Buehl, George T.: *See—*
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Bull, David W.; and Rautiola, Norman A., to Nartron Corporation. Lens shield means. 4,126,375, Cl. 350-58.000.
Bullerdiek, Wendell A., to Calspan Corporation. Impact sensitive safety-relief system for tank cars. 4,126,151, Cl. 137-43.000.
Bundy, Gordon L.; and Nelson, Norman A., to Upjohn Company, The. 11-Deoxy-cis-4,5-didehydro-ω-aryl-PGE compounds. 4,126,754, Cl. 560-53.000.
Bunger, Heinrich; and Bleh, Otto W., deceased (by Bleh, Rita M., heiress), to Dynamit Nobel Aktiengesellschaft. Process for the preparation of dimethyl terephthalate. 4,126,755, Cl. 560-77.000.
Bunker Ramo Corporation: *See—*
Hashimoto, Tetsuo; and Fukunaga, Yasuo, 4,126,372, Cl. 339-177.00E.
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Burdick, Robert E.; and Prajapati, Punamchand P., to Rolair Systems, Inc. Air supply track for air bearing transporter and the like. 4,126,093, Cl. 104-159.000.
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Burns, Johnson R. Scoop. 4,126,346, Cl. 294-55.000.
Burov, Vladimir P.: *See—*
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Bussell, Rodney L.: *See—*
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Busson, Christian: *See—*
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Butler, John P.; den Hartog, James; and Molson, Fred W. R., to Atomic Energy of Canada Limited. Process for the exchange of hydrogen isotopes using a catalyst packed bed assembly. 4,126,667, Cl. 423-580.000.
Butler-Newton, Inc.: *See—*
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Butts, Bruce D.: *See—*
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Byrum, Bernard W., Jr.: *See—*
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Wedding, Donald K.; Ernsthausen, Roger E.; Byrum, Bernard W., Jr.; and Fein, Michael E., 4,126,809, Cl. 313-221.000.
Bytniewski, Joseph; Chovet, Patrice; Gabillard, Jean-Pierre; and Prost, Roger, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Method of refrigeration and refrigeration apparatus. 4,126,017, Cl. 62-514.0JT.
C. R. Bard, Inc.: *See—*
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Cada, Frank E.: *See—*
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Caesar, Philip D.; Garwood, William E.; Peters, Alan W.; and Wise, John J., to Mobil Oil Corporation. Method of upgrading a Fischer-Tropsch light oil. 4,126,644, Cl. 260-676.00R.
Calder, John A.; Rovnyak, Richard M.; and Lee, David Q., to GTE Automatic Electric Laboratories Incorporated. Detector circuit for sensing battery polarity and loop closure. 4,126,765, Cl. 179-18.0AH.
Caledonian Moroccan Construction Ltd. S.A.: *See—*
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California Injection Molding Co., Inc.: *See—*
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Cannon, Lee E., to Dana Corporation. Stepping motor control circuit. 4,126,821, Cl. 318-696.000.
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Ohtaki, Syohei; Nakamura, Zenzo; Tsunekawa, Tokuichi; Ito, Tadashi; Aizawa, Hiroshi; and Uchiyama, Takashi, 4,126,877, Cl. 354-149.000.
Suzuki, Ryoichi; Uchidoi, Masanori; Mashimo, Yukio; Taguchi, Tetsuya; Ono, Yusuke; and Aizawa, Hiroshi, 4,126,874, Cl. 354-60.00R.
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Capowski, Robert S.; Krygowski, Matthew A.; and Zimmerman, Terrence K., to International Business Machines Corporation. Request forwarding system. 4,126,897, Cl. 364-200.000.
Carleton, Peter S.; Ewen, James H., Jr.; and Reymore, Harold E., Jr., to Upjohn Company, The. High-modulus polyisocyanurate elastomers. 4,126,741, Cl. 528-57.000.
Carleton, Peter S.; Ewen, James H., Jr.; and Reymore, Harold E., Jr., to Upjohn Company, The. High-modulus polyisocyanurate elastomers. 4,126,742, Cl. 528-57.000.
Carlsmith, Lawrence A., to Canadian Ingersoll-Rand Company. Pressure drop device for fluid suspensions. 4,126,542, Cl. 209-258.000.
Carlson, David E.: *See*—
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Carlsson, Karl I.; and Akesson, Sven T., to Aktiebolaget Bofors. Window or door frame. 4,125,976, Cl. 52-217.000.
Carnes, James E.; and Dawson, Robert H., to RCA Corporation. Balanced capacitance charge transfer device. 4,126,836, Cl. 333-70.00T.
Carney, Richard W. J.; and deStevens, George, to Ciba-Geigy Corporation. Tertiary aminoacids. 4,126,691, Cl. 424-274.000.
Carr, Walter J., Jr.; and Deis, Daniel W., to Westinghouse Electric Corp. Superconductive winding. 4,126,798, Cl. 310-204.000.
Carruet, Valere J. M.: *See*—
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Carson, Kent R.; and Hess, Charles M., to Texas Instruments Incorporated. Package for multielement electro-optical devices. 4,126,882, Cl. 357-74.000.
Cartier, George E., to Monsanto Company. Abrasion resistant coating compositions. 4,126,601, Cl. 260-42.270.
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Gale, Preston L.; and Fair, Jack E., 4,125,926, Cl. 29-156.50R.
Grawey, Charles E., 4,125,930, Cl. 29-450.000.
Haak, Willard J.; Marsden, Howard A.; and Stemler, Orrin A., 4,126,083, Cl. 91-176.000.
Holze, Gordon H., 4,126,359, Cl. 305-11.000.
Shelby, Robert L.; and Nelson, Delbert G., 4,126,058, Cl. 74-606.00R.
Stevens, W. Gene, 4,126,201, Cl. 180-70.00R.
Wirt, Leon A., 4,126,235, Cl. 214-3.000.
Cather, Douglas A., Jr., to Garlock Inc. Method of installing shaft seal with reformable shell. 4,126,316, Cl. 277-1.000.
Causey, G. Donald: *See*—
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Cawley, Don; and Ohmstede, Bob, to Ohmstede Machine Works, Inc. Method and apparatus for pulling tubes from heat exchanger baffles. 4,125,928, Cl. 29-282.000.
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Cerwin, Robert J., to Ethicon, Inc. Package for multiple surgical sutures. 4,126,221, Cl. 206-63.300.
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Cessou, Maurice: *See*—
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Cha, Chang Y., to Occidental Oil Shale, Inc. Method of enhancing yield from an in situ oil shale retort. 4,126,180, Cl. 166-261.000.
Chaika, Nikolai V.: *See*—
Movchan, Boris A.; Timashov, Viktor A.; and Chaika, Nikolai V., 4,126,811, Cl. 313-453.000.
Champion International Corporation: *See*—
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Roccaforte, Harry I., 4,126,266, Cl. 229-39.00R.
Thompson, Kenneth P.; Ihde, Richard C.; and Roth, Clarence E., 4,126,262, Cl. 229-17.00G.
Champion International Corporaton: *See*—
Hyland, William C.; and Swanson, Elmer G., 4,126,225, Cl. 206-607.000.
Channel, Glenn L., to Graber Industries, Inc. Folding tool carrier. 4,126,189, Cl. 172-456.000.
Chapront, Pierre A., to Jeumont-Schneider. Method and apparatus for stressless rolling of metals. 4,126,028, Cl. 72-19.000.
Chas. Olson & Sons: *See*—
Nelson, Eldrid W.; and Auth, Thomas L., 4,126,349, Cl. 296-24.00R.
Chaunis, Serge: *See*—
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Moore, Donald G., 4,126,777, Cl. 219-10.55M.
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Chemische Werke Huels, A.G.: *See*—
Scholz, Bernhard; Obenaus, Fritz; Franz, Gerhard; Erberich, Hans-Jurgen; and Reitemeyer, Heinz-Otto, 4,126,748, Cl. 560-239.000.
Chernyavsky, Vladimir P.: *See*—
Iogansen, Vadim I.; Kadi-Ogly, Ibragim A.; Petrov, Jury V.; Ptakul, Izrail A.; Chernyavsky, Vladimir P.; Shapiro, Aron B.; and Shkoda, Gennady V., 4,126,799, Cl. 310-260.000.
Chevron Research Company: *See*—
Suzuki, Shigeto, 4,126,614, Cl. 260-239.30R.
Chiang, Anne, to Xerox Corporation. Electrophoretic composition and display device. 4,126,528, Cl. 204-180.00R.
Chicago Bridge & Iron Company: *See*—
Bruening, Robert A., 4,126,243, Cl. 220-224.000.
Lange, Kenneth W., 4,126,099, Cl. 114-74.00A.
Chicago Etching Corporation: *See*—
Huerth, Arthur W., 4,125,951, Cl. 37-53.000.
Chien, Sze-Foo: *See*—
Allen, Joseph C.; and Chien, Sze-Foo, 4,126,182, Cl. 166-314.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT: *See*—
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog, Borbala; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,126,622, Cl. 260-340.300.
Turcsan, Istvan; Jelinek, Istvan; Ugrics, Jozsef; Csik, Istvan; Somfai, Eva; and Csaszar nee Toth, Iren, 4,126,615, Cl. 542-449.000.
Chodzko, Richard A.; and Mason, Stephen B., to United States of America, Air Force. Converging wave unstable resonator. 4,126,381, Cl. 350-294.000.
Chou, Wayne W. Remote speedometer-tachometer. 4,126,045, Cl. 73-488.000.
Chovet, Patrice: *See*—
Bytniewski, Joseph; Chovet, Patrice; Gabillard, Jean-Pierre; and Prost, Roger, 4,126,017, Cl. 62-514.0JT.
Christensen, Fredrich M. Apparatus for draining a cooling system. 4,126,108, Cl. 123-41.140.
Christie, Howard W.; and Hodge, Walter D., to H. C. Price Co. Applying mastic alongside weld bead. 4,126,718, Cl. 427-286.000.
Christopher, Chris J.: *See*—
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,126,898, Cl. 364-900.000.
Chrysler Corporation: *See*—
Forsyth, John R., 4,126,055, Cl. 74-476.000.
Ghosh, Subrata, 4,126,495, Cl. 148-32.000.
Simmons, Richard T., 4,126,110, Cl. 123-122.00D.
Ciaperoni, Aldemaro; Quaglia, Giuseppe; and Dall'Asta, Gino, to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A. Thermostable flameproofing agent for copolyesters, process for making it, copolyester compositions prepared by using it, process for said compositions, and formed bodies made from said compositions. 4,126,646, Cl. 260-860.000.
Ciba-Geigy Corporation: *See*—
Carney, Richard W. J.; and deStevens, George, 4,126,691, Cl. 424-274.000.
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,126,619, Cl. 260-326.00C.
Garnish, Edward W.; and Wilson, Robert G., 4,126,505, Cl. 156-330.000.
Illy, Hugo, 4,126,590, Cl. 521-89.000.
Jost, Max, 4,126,626, Cl. 260-378.000.
Moser, Hans; and Schurter, Rolf, 4,126,440, Cl. 71-76.000.
Robson, Ronald D.; and Saelens, Jeffrey K., 4,126,684, Cl. 424-254.000.
Ciba-Geigy (UK) Limited: *See*—
Jones, Thomas I.; Graham, Geoffrey; and Finan, Michael A., 4,126,549, Cl. 210-58.000.

Cicognani, Mario, to Industrie Pirelli S.p.A. V-belt. 4,126,053, Cl. 74-231.00P.

Citrus Central, Inc.: *See—*
Johnson, Joseph D.; Viale, Hector E.; and Wait, Donald M., 4,126,709, Cl. 426-540.000.

Ciuffini, Anthony J., to Xerox Corporation. Evaporation technique for producing high temperature photoreceptor alloys. 4,126,457, Cl. 96-1.50R.

Ciurca, Samuel J., Jr.: *See—*
Pupo, David A.; Ciurca, Samuel J., Jr.; Haist, Grant M.; and King, James R., 4,126,461, Cl. 96-50.00R.

Claar, James A.: *See—*
Schimmel, Karl F.; Claar, James A.; Seiner, Jerome A.; and Wismer, Marco, 4,126,596, Cl. 260-29.6NR.

Clark, Charles R.; Clark, Richard J.; and Steele, Gerald G., to Parker-Hannifin Corporation. Aerial refueling device. 4,126,162, Cl. 141-98.000.

Clark, Richard J.: *See—*
Clark, Charles R.; Clark, Richard J.; and Steele, Gerald G., 4,126,162, Cl. 141-98.000.

Clark, Robert E., to Thexton Manufacturing Company. Spark plug cover remover. 4,125,938, Cl. 29-764.000.

Clark, Robert E.: *See—*
Tichy, Brian N.; and Clark, Robert E., 4,126,044, Cl. 73-440.000.

Clavin, Edward A., to Midcon Pipeline Equipment Co. Pipe end finishing apparatus. 4,126,065, Cl. 82-4.00C.

Clear Corporation, The: *See—*
Cowden, Ernest A.; and Lauber, Leo E., 4,126,130, Cl. 128-91.00R.

Clem, Arthur G., to American Colloid Company. Method and apparatus for screening particulate materials. 4,126,543, Cl. 209-263.000.

Clough, Herbert P. Chair to rocking chair conversion unit. 4,126,353, Cl. 297-133.000.

Coats, Robert E.: *See—*
Bartlett, Harold H.; Bussell, Rodney L.; and Coats, Robert E., 4,126,038, Cl. 73-118.000.

Cochran, Michael J., to Texas Instruments Incorporated. Electronic phase detector circuit. 4,126,831, Cl. 331-8.000.

Coel, Joseph B.; Jablonski, Donald D.; and Seruga, Edward A., to Badger Meter, Inc. Threaded coupling. 4,126,338, Cl. 285-330.000.

Coffin, Harry S., to Computer Peripherals, Inc. Method of coating metal surfaces. 4,126,521, Cl. 204-15.000.

Cognevich, Dimitry J., to Freeport Minerals Company. Method and apparatus for handling solvent extraction crud. 4,126,551, Cl. 210-83.000.

Cohen, Abraham N. Fountain blade and apparatus for calibrating the same. 4,126,091, Cl. 101-365.000.

Cohen, Manuel, to Wagner Folding Box Corporation. Cardboard container. 4,126,264, Cl. 229-27.000.

Cohn, David L.: *See—*
Graupe, Daniel; Cohn, David L.; and Causey, G. Donald, 4,126,761, Cl. 179-1.50R.

Coin, Andre: *See—*
Braun, Hans-Rudiger; Rosenbauer, Hans-Gunter; Coin, Andre; and Davril, Roland, 4,126,470, Cl. 106-95.000.

Coiner, Marsha H.; Haylock, John C.; Newland, Julian H.; and Schwartz, Judd L., to Allied Chemical Corporation. Antistatic carpet. 4,126,415, Cl. 8-115.500.

Cole, Darrell D.: *See—*
Proctor, D. Frederic; and Cole, Darrell D., 4,126,771, Cl. 232-175.30R.

Cole, Edward D. Cooking-stove structure. 4,126,778, Cl. 219-461.000.

Coleman Company, Inc., The: *See—*
Hastings, Thomas C., 4,126,117, Cl. 126-44.000.

Colglazier, Donald F.; Fallon, John L.; Kollar, Ernest P.; and Mares, Fred R., to International Business Machines Corporation. Combing wheel. 4,126,305, Cl. 271-120.000.

Collard Valley Research, Inc.: *See—*
Barnett, Dil G., 4,126,703, Cl. 426-2.000.

Collins, Bruce M., to Imperial Chemical Industries Limited. Selective hydrogenation of highly unsaturated hydrocarbons in the presence of less unsaturated hydrocarbons. 4,126,645, Cl. 260-677.00A.

Colombo, Ambrogio, to Fibelco N.V. Steam iron. 4,125,953, Cl. 38-77.700.

Combustion Engineering, Inc.: *See—*
Bevilacqua, Frank; Dietrich, Joseph R.; Flinn, William S.; Groves, Malcolm D.; and West, John M., 4,126,767, Cl. 176-36.00R.
Klotz, Robert J.; and Stephen, Donald W., 4,126,515, Cl. 176-87.000.
Prestridge, Floyd L., 4,126,537, Cl. 204-302.000.

Combustion Power Company, Inc.: *See—*
Reese, Richard G., 4,126,435, Cl. 55-474.000.

Compagnie Generale pour les Developpements Operationnels des Richesses sous-Marines "C.G. Doris": *See—*
Lamy, Jacques E.; Michel, Dominique; and Serrano, Francisco de Assis M., 4,126,011, Cl. 405-196.000.
Michel, Dominique; and Serrano, Francisco de Assis M., 4,126,010, Cl. 405-202.000.

Compagnie Internationale pour l'Informatique Cii-Honeywell Bull: *See—*
Bruges, Jean-Claude, 4,126,269, Cl. 236-49.000.

Computer Peripherals, Inc.: *See—*
Coffin, Harry S., 4,126,521, Cl. 204-15.000.

Congoleum Corporation: *See—*
Kaminski, Stanley J., 4,126,727, Cl. 428-172.000.

Connin, John L., to Eastman Kodak Company. Job stream programmer apparatus. 4,126,390, Cl. 355-14.000.

Conrad, Jens; Schaper, Ulf-Armin; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). 2-Methyl-2-ethyl-hexanoate ester perfume compositions. 4,126,585, Cl. 252-522.000.

Conrad, William A., to Rheem Manufacturing Company. Method and apparatus for container pressure testing. 4,126,034, Cl. 73-49.200.

Continental Oil Company: *See—*
Leach, Bruce E., 4,126,749, Cl. 568-804.000.
Miller, Dale E., 4,126,203, Cl. 181-109.000.
Poe, Ronald L.; Scamehorn, John F.; and Schupbach, Cortlan R., 4,126,750, Cl. 568-804.000.
Rogers, Charles H., 4,126,568, Cl. 252-63.200.

Control Concepts, Inc.: *See—*
Zeuner, Kenneth W.; and Jarman, Alonzo B., 4,126,293, Cl. 251-30.000.

Conwed Corporation: *See—*
Swanson, Clare E.; and Kelly, Michael G., 4,126,556, Cl. 210-242.0AS.

Cook, Lon S. Disposable food tray with condiment container. 4,126,261, Cl. 229-15.000.

Cooper, Roydon B., to Pall Corporation. Pharmaceutical filter. 4,126,559, Cl. 210-445.000.

Coppock, Richard A., to GTE Sylvania Incorporated. Bulk wave bragg cell. 4,126,834, Cl. 332-7.510.

Corbett, James P. Moveable seat for crystal in an oscillating crystal transducer systems. 4,126,801, Cl. 310-328.000.

Corning Glass Works: *See—*
Bailey, Alan C., 4,126,436, Cl. 65-13.000.
Brandes, Lewis H., 4,126,422, Cl. 23-293.00R.
Grossman, David G., 4,126,476, Cl. 106-39.700.
Holleran, Louis M.; and Sandor, Sylvester R., 4,126,728, Cl. 428-204.000.
Kelm, Everett F., 4,126,178, Cl. 165-165.000.
Messing, Ralph A.; and Ramsey, William S., 4,126,516, Cl. 195-103.50R.
Reade, Richard F., 4,126,477, Cl. 106-39.700.

Costello, Thomas M.; and Bressanelli, Jerome P., to Crucible Inc. Lanthanum-modified high-temperature alloy. 4,126,447, Cl. 75-122.000.

Cote, Bernard. Tension release coupling for fishing line. 4,125,958, Cl. 43-43.120.

Cotter, Mitchell A. System and method of measuring fluid pressure force. 4,126,049, Cl. 73-702.000.

Coulombe, Lionel J., to Singer Company, The. Buttonhole cam unit with ball bearing clutch. 4,126,098, Cl. 112-158.00B.

Coursen, David L., to Du Pont de Nemours, E. I., and Company. Inorganic cement grouting system for use in anchoring a bolt in a hole and compartmented package for use therewith. 4,126,005, Cl. 405-261.000.

Courter, Mark L. Waterbed frame structure. 4,125,912, Cl. 5-370.000.

Courty, Philippe: *See—*
Sugier, Andre; Courty, Philippe; and Freund, Edouard, 4,126,581, Cl. 252-463.000.

Covington, Wayne F.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,126,898, Cl. 364-900.000.

Cowden, Ernest A.; and Lauber, Leo E., to Clear Corporation, The. Wound protective device. 4,126,130, Cl. 128-91.00R.

Cowherd, Frank G., III; and Theiling, Louis F., Jr., to Union Carbide Corporation. Carbamoyloxy acrylate compounds. 4,126,747, Cl. 520-166.000.

Cox, Charles W., to General Electric Company. Ceramic base for glass halogen lamps. 4,126,810, Cl. 313-318.000.

Cox, Wayne A. Liquid fueled lamp. 4,126,408, Cl. 431-2.000.

Cragoe, Edward J., Jr.; and Bicking, John B., to Merck & Co., Inc. Substituted phenoxy-tridecenoic acids/esters. 4,126,629, Cl. 260-405.000.

Crawley, R. W., to Boeing Co., The. Crash load attenuating valve for an aircraft landing gear shock strut. 4,126,212, Cl. 188-317.000.

Creasy, Leonard R.: *See—*
MacLeod, Colin J.; and Creasy, Leonard R., 4,125,981, Cl. 52-309.120.

Creatura, John A.; and Mincer, Joseph L., to Xerox Corporation. Inorganic fluoride reversal carrier coatings. 4,126,458, Cl. 96-1.0SD.

Crockett, Jerry W.: *See—*
Hollister, Robert H.; Crockett, Jerry W.; Younger, Harold R., Jr.; and Ricketts, Garland B., 4,126,844, Cl. 336-198.000.

Croll, Lionel. Archery target and method of making same. 4,126,501, Cl. 156-183.000.

Cromwell Metals, Inc.: *See—*
Cromwell, Paul J., 4,126,673, Cl. 241-14.000.

Cromwell, Paul J., to Cromwell Metals, Inc. Method for processing dross. 4,126,673, Cl. 241-14.000.

Cronshaw, David; Turner, William D.; and Shemer, Jack E., to Xerox Corporation. Interrupt request controller for data processing system. 4,126,893, Cl. 364-200.000.

Cronshaw, David; Keddy, James R.; Shemer, Jack E.; and Turner, William D., to Xerox Corporation. Memory overlay linking system. 4,126,894, Cl. 364-200.000.

Cross, Barrington, to American Cynamid Company. Substituted imidazo (1,5-D)-as-triazin-4-ols, and herbicidal use thereof. 4,126,444, Cl. 71-93.000.

Cross, Graham W., to Imperial Chemical Industries Limited. Method of cutting metal elements underwater and a shaped explosive charge device therefor. 4,126,092, Cl. 102-24.0HC.

Cross River Products, Inc.: *See—*
Sloan, James L.; and Meeker, Greg W., 4,126,331, Cl. 280-650.000.
Crucible Inc.: *See—*
Costello, Thomas M.; and Bressanelli, Jerome P., 4,126,447, Cl. 75-122.000.
Crumley, Jesse C. Combination pommel horse and rotatable wheel mounted leg support device. 4,126,308, Cl. 272-64.000.
Csaszar nee Toth, Iren: *See—*
Turcsan, Istvan; Jelinek, Istvan; Ugrics, Jozsef; Csik, Istvan; Somfai, Eva; and Csaszar nee Toth, Iren, 4,126,615, Cl. 542-449.000.
Csik, Istvan: *See—*
Turcsan, Istvan; Jelinek, Istvan; Ugrics, Jozsef; Csik, Istvan; Somfai, Eva; and Csaszar nee Toth, Iren, 4,126,615, Cl. 542-449.000.
Cunningham, James C. Fishing rod holder and indicator assembly. 4,125,957, Cl. 43-17.000.
Curnutt, Charles R. Horizontal inertia-responsive shock absorber. 4,126,302, Cl. 267-8.00D.
Curtis, Michael; Davies, Richard L.; and Galvin, John S., to Lever Brothers Company. Process of spray drying nonionic surfactant-containing detergents also containing a cationic nitrogen compound. 4,126,586, Cl. 252-524.000.
Custred, U. K.: *See—*
Timberlake, Richard C.; and Custred, U. K., 4,126,275, Cl. 241-1.000.
Dabal, Dennis J.; and Williams, Joseph J., to Hoffmann-La Roche Inc. Manufacture of pharmaceutical dosage forms. 4,126,502, Cl. 156-184.000.
Dageforde, Allen F.: *See—*
Porter, Joe A.; and Dageforde, Allen F., 4,126,531, Cl. 204-195.00P.
D'Agrosa, Rosario: *See—*
De Sisto, Frank A.; and D'Agrosa, Rosario, 4,126,288, Cl. 248-188.100.
Dahl, Carl B.: *See—*
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Daimler-Benz Aktiengesellschaft: *See—*
Abthoff, Jorg; Schuster, Hans-Dieter; and Kreeb, Reiner, 4,125,997, Cl. 60-289.000.
Hafner, Gunther; and Pfeffer, Victor, 4,126,111, Cl. 123-122.00E.
Hormann, Bernt O.; and Frey, Egon, 4,126,820, Cl. 318-468.000.
Dall'Asta, Gino: *See—*
Ciaperoni, Aldemaro; Quaglia, Giuseppe; and Dall'Asta, Gino, 4,126,646, Cl. 260-860.000.
Dalton, Murphy L., Jr. Magnetic field detection apparatus. 4,126,823, Cl. 324-0.50E.
Dalzell, Haldean C.: *See—*
Razdan, Raj K.; Dalzell, Haldean C.; and Pars, Harry G., 4,126,694, Cl. 424-283.000.
Razdan, Raj K.; Dalzell, Haldean C.; Terris, Barbara Z.; and Pars, Harry G., 4,126,695, Cl. 424-283.000.
Dana Corporation: *See—*
Belter, Jerome G., 4,126,318, Cl. 277-11.000.
Cannon, Lee E., 4,126,821, Cl. 318-696.000.
Dann, John R., to Eastman Kodak Company. Low temperature adhesives for photographic materials. 4,126,464, Cl. 96-73.000.
Dardoufas, Kimon C.: *See—*
Marshall, Robert M.; and Dardoufas, Kimon C., 4,126,564, Cl. 252-8.900.
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, to Ciba-Geigy Corporation. Crosslinkable bis-imidyl derivatives. 4,126,619, Cl. 260-326.00C.
da Silva Bento, Julio C. S., to Etablissement Capitrop. Method and inclined chamber furnace for carbonizing fluent carbon-containing material. 4,126,518, Cl. 201-27.000.
Davies, John; and Fudger, Shirley L. W., to USM Corporation. Dust extraction arrangement for an automatic roughing machine. 4,126,021, Cl. 69-6.500.
Davies, John: *See—*
Tutt, Kingsley J.; Willbond, William F.; and Davies, John, 4,126,020, Cl. 69-6.500.
Davies, Richard L.: *See—*
Curtis, Michael; Davies, Richard L.; and Galvin, John S., 4,126,586, Cl. 252-524.000.
Davis, Bill G. Temperature sensor valve. 4,126,114, Cl. 123-198.00D.
Davis, Donald G.; Wippler, John; and Heitman, David L., to Sierra Engineering Co. Facemask and goggle combination for excluding smoke or noxious gases from the goggles. 4,126,131, Cl. 128-142.400.
Davison, Sol: *See—*
Gergen, William P.; and Davison, Sol, 4,126,600, Cl. 260-42.180.
Davril, Roland: *See—*
Braun, Hans-Rudiger; Rosenbauer, Hans-Gunter; Coin, Andre; and Davril, Roland, 4,126,470, Cl. 106-95.000.
Davy, Peter F.; and Drolet, Michael L., to Armour-Dial, Inc. Cosmetic stick. 4,126,679, Cl. 424-66.000.
Dawson, Robert H.: *See—*
Carnes, James E.; and Dawson, Robert H., 4,126,836, Cl. 333-70.00T.
Day, Edward J., to Gowing Engineering Limited. Demountable tilting container assemblies for light vans and trucks. 4,126,357, Cl. 298-1.00A.
DCA Food Industries Inc.: *See—*
McCarthy, John P.; Moyer, John; and Fischer, Leonard, 4,126,704, Cl. 426-304.000.
DeBerry, David W., to Southern California Edison Company. Ferrous ion scrubbing of flue gas. 4,126,529, Cl. 204-180.00P.
Decicom Systems, Inc.: *See—*
Rosenthal, Alan S.; Fernau, Bernard R.; and Seifer, Stanley, 4,126,780, Cl. 235-458.000.
Decroix, Jean-Claude, to Societe Chimique des Charbonnages - CdF Chimie. Polyolefinic compositions containing e/va copolymer. 4,126,649, Cl. 260-897.00B.
Deep Oil Technology, Inc.: *See—*
Walker, Raymond W., 4,126,183, Cl. 166-338.000.
Deere & Company: *See—*
Schlueter, Francis E., 4,125,988, Cl. 56-30.000.
Schreiner, Lester D.; and Steilen, Ronald M., 4,126,187, Cl. 172-311.000.
Smemo, Alfred S., 4,126,059, Cl. 74-730.000.
DeFrees, Joseph H. Adapter valve mechanism for transportation tank. 4,126,294, Cl. 251-99.000.
DeHaitre, Lon, to Abbott Screw and Manufacturing Co. Sealing nut with preformed turtleneck insert. 4,126,170, Cl. 151-7.000.
Deis, Daniel W.: *See—*
Carr, Walter J., Jr.; and Deis, Daniel W., 4,126,798, Cl. 310-204.000.
DeLong, David C.; and Shell, William O., to Stadiums Unlimited, Inc. Bench seats with end aligning and reinforcing inserts. 4,126,354, Cl. 297-248.000.
Delta Elevator Equipment Corporation: *See—*
Mente, Alfred C.; and LePore, Paul E., 4,126,849, Cl. 340-19.00R.
Dendor, Paul F.: *See—*
Johnson, Craig E.; and Dendor, Paul F., 4,126,497, Cl. 149-100.000.
den Hartog, James: *See—*
Butler, John P.; den Hartog, James; and Molson, Fred W. R., 4,126,667, Cl. 423-580.000.
Denison, Early B., to Shell Oil Company. Drill string telemeter system. 4,126,848, Cl. 340-18.0LD.
Denisov, Vladimir F.: *See—*
Mamistov, Vasily V.; Koryagin, Alexandr A.; Burov, Vladimir P.; Denisov, Vladimir F.; and Balashov, Vasily T., 4,125,947, Cl. 34-108.000.
Derr, Walter R., Jr.; Gallagher, Lawrence E.; Haddad, James H.; McGovern, Stephen J.; Schatz, Klaus W.; and Smith, Fritz A., to Mobil Oil Corporation. Method and arrangement of apparatus for hydrogenating hydrocarbons. 4,126,539, Cl. 208-108.000.
Derwent-Wryde, Keith. Storage unit. 4,126,231, Cl. 211-99.000.
Desai, Nitin V.: *See—*
Poliniak, Eugene S.; and Desai, Nitin V., 4,126,712, Cl. 427-41.000.
De Sisto, Frank A.; and D'Agrosa, Rosario, to J. C. Penney Co., Inc. Portable article display assembly. 4,126,288, Cl. 248-188.100.
deStevens, George: *See—*
Carney, Richard W. J.; and deStevens, George, 4,126,691, Cl. 424-274.000.
Deutsche Babcock Aktiengesellschaft: *See—*
Dibowski, Gunter; and Grammes, Helmut, 4,126,207, Cl. 184-1.00C.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Krorre, Helmut; and Leidl, Peter, 4,126,446, Cl. 75-53.000.
Kunst, Helmut; and Scondo, Christian, 4,126,488, Cl. 148-6.000.
Reinwald, Elmar; Schwuger, Milan J.; and Smolka, Heinz, 4,126,574, Cl. 252-179.000.
Wurm, Jorg, 4,126,493, Cl. 148-20.000.
de Vries, Hans, to Zellweger Uster Limited. Circuit arrangement for a remote control receiver. 4,126,793, Cl. 307-129.000.
Dibowski, Gunter; and Grammes, Helmut, to Deutsche Babcock Aktiengesellschaft. Splash lubricating system for coal grinding rolls. 4,126,207, Cl. 184-1.00C.
DiBugnara, Raymond, to TRW Inc. Forming films on semiconductor surfaces with metal-silica solution. 4,126,713, Cl. 427-88.000.
Dickhudt, Eugene A.: *See—*
Bolduc, Lee R.; and Dickhudt, Eugene A., 4,126,134, Cl. 128-235.000.
Dickinson, Robert H., to Lehigh Press Inc. Method of preparing a publication with a separable redemption coupon or the like. 4,126,333, Cl. 281-3.00R.
Didier Engineering GmbH: *See—*
Wolowski, Eckard; and Hameier, Martin, 4,126,431, Cl. 55-23.000.
Diem, Hans; Dudeck, Christian; Simmler, Werner; Marquardt, Siegfried; and Stingl, Walter, to BASF Aktiengesellschaft. Manufacture of supported silver catalysts. 4,126,582, Cl. 252-476.000.
Dietrich, Joseph R.: *See—*
Bevilacqua, Frank; Dietrich, Joseph R.; Flinn, William S.; Groves, Malcolm D.; and West, John M., 4,126,767, Cl. 176-36.00R.
Digicon Corporation: *See—*
Lynch, Marine D., 4,126,042, Cl. 73-361.000.
Di Ninno, Frank P., to Merck & Co., Inc. Substituted 3-oxo-6-thia-2-azabicyclo [2.2.0] hexanes. 4,126,692, Cl. 424-275.000.
Diversified Insulation, Inc.: *See—*
Ward, Bruce K., 4,125,971, Cl. 52-92.000.
Dixon, David A., to Standard Oil Company (Indiana). Sea-floor template. 4,126,008, Cl. 405-207.000.
Dixon, Robert L.; and Neilson, William J., to Smith International, Inc. Replaceable wear pad for a rock bit cutter yoke. 4,126,195, Cl. 175-364.000.
Dobkin, Robert C., to National Semiconductor Corporation. Measurement system signal isolation. 4,126,826, Cl. 324-127.000.
Doerschlag, Christian. Flash reactor. 4,126,550, Cl. 210-60.000.
Doi, Yuuji; and Masumori, Terumiti, to Nippon Steel Corporation. Apparatus for detecting the level of a molten metal in a mold. 4,126,041, Cl. 73-295.000.
Donakowski, William A.; and Morgan, John R., to Ford Motor Com-

pany. Method of adherency of electrodeposits on light weight metals. 4,126,483, Cl. 134-3.000.
Donecker, Fred W., to United States Steel Corporation. Boots for wire rope terminations. 4,126,498, Cl. 156-86.000.
Doniat, Denis, to Sorapec Societe de Recherches et d'Application Electronchimiques. Electrochemical generator comprising an electrode in the form of a suspension. 4,126,733, Cl. 429-12.000.
Doriguzzi, Rino; Egloff, Markus; Kaufmann, Meinolph; and Scheffer, Terry J., to BBC Brown, Boveri & Company Limited. Electrooptic display device. 4,126,383, Cl. 350-338.000.
Dorot, Henri, to Verlinde S.A. Brake and a control apparatus for the opening of a brake. 4,126,299, Cl. 254-186.00R.
Dow Chemical Company, The: *See—*
Hickner, Richard A.; and Bredeweg, Corwin J., 4,126,746, Cl. 544-219.000.
MacWilliams, Dalton C.; and Wirt, James R., 4,126,480, Cl. 106-100.000.
Manfroy, Willy; and Klimpel, Richard R., 4,126,276, Cl. 241-16.000.
Manfroy, Willy; and Klimpel, Richard R., 4,126,277, Cl. 241-16.000.
Manfroy, Willy; and Klimpel, Richard R., 4,126,278, Cl. 241-16.000.
Downey, David L.; Kennedy, James A.; and Neely, Liston E., to Honeywell Information Systems Inc. Partial byte receive apparatus for digital communication systems. 4,126,764, Cl. 179-15.0BA.
Downing, Terry R.; and Geiersbach, Allois F., to Allis-Chalmers Corporation. Lift truck safety system having protection against component failure. 4,126,237, Cl. 214-674.000.
Dowty Mining Equipment Limited: *See—*
Walker, John H.; and Sutton, James A., 4,126,002, Cl. 405-296.000.
Dravo Corporation: *See—*
Moller, Klaus; Michel, Dierk; Wolert, Hartmut; and Ernst, Helmut, 4,126,411, Cl. 432-80.000.
Dresser, Thorpe: *See—*
Grosboll, Martin P.; Edison, Robert R.; and Dresser, Thorpe, 4,126,540, Cl. 208-146.000.
Dreulle, Noel: *See—*
Longuepee, Michel; and Dreulle, Noel, 4,126,469, Cl. 106-14.120.
Drillick, Jacob H., to Drillick-LaManna Corporation. Paper tape punch and reader. 4,126,257, Cl. 226-76.000.
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Drillick, Jacob H., 4,126,257, Cl. 226-76.000.
Drolet, Michael L.: *See—*
Davy, Peter F.; and Drolet, Michael L., 4,126,679, Cl. 424-66.000.
Drouillard, Gordon E. Radio antenna bracket. 4,126,290, Cl. 248-226.100.
Duarte, Patricia A. Peelable human nail coatings. 4,126,144, Cl. 132-73.000.
Dudeck, Christian: *See—*
Diem, Hans; Dudeck, Christian; Simmler, Werner; Marquardt, Siegfried; and Stingl, Walter, 4,126,582, Cl. 252-476.000.
Dumont, Eston A. Cable clamp. 4,125,919, Cl. 24-136.00R.
Dunn, Richard G., to Real-Reel Corporation, The. The End cap for cloth reel. 4,126,286, Cl. 242-222.000.
Du Pont de Nemours, E. I., and Company: *See—*
Coursen, David L., 4,126,005, Cl. 405-261.000.
Howard, Edward G., Jr., 4,126,647, Cl. 260-878.00R.
Krespan, Carl G.; and Smart, Bruce E., 4,126,631, Cl. 260-456.00F.
Lauder, Alan, 4,126,580, Cl. 252-462.000.
Roos, Leo, 4,126,466, Cl. 96-84.0UV.
Tomic, Ernst A., 4,126,003, Cl. 405-261.000.
Tomic, Ernst A., 4,126,009, Cl. 405-260.000.
Durant, Graham J.; Ganellin, Charon R.; and Parsons, Michael E., to Smith Kline & French Laboratories Limited. Method of stimulating histamine H_2-receptors. 4,126,670, Cl. 424-9.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Bunger, Heinrich; and Bleh, Otto W., deceased, 4,126,755, Cl. 560-77.000.
E. H. Galer and Co. Limited: *See—*
Galer, Edgar; and Holt, Paul S., 4,126,259, Cl. 227-30.000.
Eales, David F., to British Gas Corporation. Coal gasification plant. 4,126,427, Cl. 48-62.00R.
Eastern Company, The: *See—*
Pelcin, Albert L., 4,126,340, Cl. 292-1.000.
Eastin, William C., to Chelsea Industries, Inc. Casein derivatives and method of producing the same. 4,126,607, Cl. 260-119.000.
Eastman Kodak Company: *See—*
Blazey, Richard N.; and Petrie, Sarah E., 4,126,385, Cl. 350-358.000.
Connin, John L., 4,126,390, Cl. 355-14.000.
Dann, John R., 4,126,464, Cl. 96-73.000.
Pupo, David A.; Ciurca, Samuel J., Jr.; Haist, Grant M.; and King, James R., 4,126,461, Cl. 96-50.00R.
Easton, Neil, to A. Long & Company Limited. Wet abrasion blasting. 4,125,969, Cl. 51-320.000.
Eaton, Homer L.: *See—*
Zollweg, Richard T.; and Eaton, Homer L., 4,126,030, Cl. 72-154.000.
Eaton-Leonard Corporation: *See—*
Zollweg, Richard T.; and Eaton, Homer L., 4,126,030, Cl. 72-154.000.
Eberspacher, J.: *See—*
Bauerschmidt, Walter, 4,126,205, Cl. 181-256.000.
Gerwin, Reinhard, 4,126,410, Cl. 431-265.000.
Eckert, Guenter: *See—*
Fischer, Karl; Horn, Peter; Eckert, Guenter; and Leppmeier, Franz, 4,126,414, Cl. 8-94.210.
Edison, Robert R.: *See—*
Grosboll, Martin P.; Edison, Robert R.; and Dresser, Thorpe, 4,126,540, Cl. 208-146.000.
Edlund, Per-Olof G., to Telefonaktiebolaget L M Ericsson. Method of preparing aluminum wire for electrical conductors. 4,126,522, Cl. 204-28.000.
Edwards, George R. Radial tire manufacturing method. 4,126,720, Cl. 428-294.000.
Edwards, Paul R. Means for testing and treatment of soil in which a plant is growing. 4,126,417, Cl. 422-56.000.
Egloff, Markus: *See—*
Doriguzzi, Rino; Egloff, Markus; Kaufmann, Meinolph; and Scheffer, Terry J., 4,126,383, Cl. 350-338.000.
Eichberg, Joseph: *See—*
Kronstein, Max; and Eichberg, Joseph, 4,126,591, Cl. 260-22.00A.
Ekstrom, Ake; Eriksson, Kjell; and Juhlin, Lars-Erik, to Asea AB. Selective voltage and current control for high voltage D.C. transmission systems. 4,126,892, Cl. 363-35.000.
Elastogran Maschinenbau GmbH & Co.: *See—*
Schneider, Fritz W.; and Grgic, Ivica, 4,126,399, Cl. 366-159.000.
Electric Power Research Institute, Inc.: *See—*
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Rich, Joseph A., 4,126,808, Cl. 313-198.000.
Elfab Corporation: *See—*
Ammon, J. Preston, 4,125,935, Cl. 29-629.000.
Elkay Products, Inc.: *See—*
Krasnow, Leonard L., 4,126,418, Cl. 422-64.000.
Elkem-Spigerverket A/S: *See—*
Kongsgaarden, Ole A., 4,126,423, Cl. 23-293.00R.
Kongsgaarden, Ole A., 4,126,424, Cl. 23-293.00R.
Elser, William F., to Owens-Illinois, Inc. Container component with easy-opening wall section. 4,126,244, Cl. 220-268.000.
El Taher, Mohamed A.; and Bertovich, Matthew G., to Westinghouse Electric Corp. Transportation apparatus with protective arrangement for combplate teeth. 4,126,218, Cl. 198-325.000.
Eltra Corporation: *See—*
Tershak, Andrew T., 4,126,112, Cl. 123-148.00E.
Emery, Robert D.: *See—*
Phillips, David L.; Moxness, Sherman U.; and Emery, Robert D., 4,126,398, Cl. 366-76.000.
EMI Limited: *See—*
Hounsfield, Godfrey N., 4,126,785, Cl. 250-445.00T.
Hounsfield, Godfrey N., 4,126,787, Cl. 250-445.00T.
LeMay, Christopher Archibald G.; and Blay, Alan G., 4,126,786, Cl. 250-445.00T.
Randall, Robert P., 4,126,805, Cl. 313-57.000.
Emile, Philip, Jr. Digital display devices with remote updating. 4,125,993, Cl. 58-23.00R.
Emmie, George A. Security container. 4,126,267, Cl. 232-4.00R.
Enchelmaier, Harvard W. K. Method and apparatus for making wound brushes. 4,126,358, Cl. 300-21.000.
Endo, Kunio: *See—*
Harada, Susumu; and Endo, Kunio, 4,126,107, Cl. 123-32.0EH.
Endo, Takaya; Sato, Shui; Kikuchi, Shoji; Kozima, Tamotsu; Usui, Tugumoto; Imamura, Hiroyuki; and Takabe, Koichi, to Konishiroku Photo Industry Co., Ltd. Process for forming a photographic magenta dye image. 4,126,462, Cl. 96-56.500.
Engelhard Minerals & Chemicals Corporation: *See—*
Pitts, Frank, 4,126,663, Cl. 423-63.000.
Erberich, Hans-Jurgen: *See—*
Scholz, Bernhard; Obenaus, Fritz; Franz, Gerhard; Erberich, Hans-Jurgen; and Reitemeyer, Heinz-Otto, 4,126,748, Cl. 560-239.000.
Erdley, Harold F., to Teledyne Industries, Inc. Twice spin frequency rotating filter. 4,126,046, Cl. 73-504.000.
Erickson, Donald C. Production of hydrogen rich gas by combined steam reforming and intermediate oxidation-reduction. 4,126,668, Cl. 423-657.000.
Eriksson, Kjell: *See—*
Ekstrom, Ake; Eriksson, Kjell; and Juhlin, Lars-Erik, 4,126,892, Cl. 363-35.000.
Erma Optical Works, Ltd.: *See—*
Sumikama, Sadao; Nakamura, Shigeru; Shirato, Kozo; Hiraizumi, Kazuo; Takasu, Nobuo; Taguchi, Mitsuru; Yamada, Tsuyoshi; and Ishiguro, Susumu, 4,126,393, Cl. 356-130.000.
Ernst, Helmut: *See—*
Moller, Klaus; Michel, Dierk; Wolert, Hartmut; and Ernst, Helmut, 4,126,411, Cl. 432-80.000.
Ernsthausen, Roger E.: *See—*
Wedding, Donald K.; Fein, Michael E.; Ernsthausen, Roger E.; and Byrum, Bernard W., Jr., 4,126,807, Cl. 313-188.000.
Wedding, Donald K.; Ernsthausen, Roger E.; Byrum, Bernard W., Jr.; and Fein, Michael E., 4,126,809, Cl. 313-221.000.
Erwin Sick Gesellschaft mit Beschrankter Haftung, Optik-Elektronic: *See—*
Hartmann, Klaus; and von Braitenberg, Meinhard, 4,126,396, Cl. 356-434.000.
Escher Wyss Limited: *See—*
Miller, Helmut; and Baumann, Kurt, 4,126,360, Cl. 308-9.000.
Esco Corporation: *See—*
Oberhelman, Henry A., 4,126,300, Cl. 266-158.000.
ESM, Inc.: *See—*
Heck, Willis A.; and Ferree, Roy E., 4,126,453, Cl. 75-257.000.

Esposito, Philip; and Spector, George. Level for power hand drill. 4,125,944, Cl. 33-347.000.

Esterowitz, Leon: *See—*
Bartoli, Filbert J.; Esterowitz, Leon; Allen, Roger E.; and Kruer, Melvin R., 4,126,033, Cl. 73-15.00A.

Etablissement Capitrop: *See—*
da Silva Bento, Julio C. S., 4,126,518, Cl. 201-27.000.

Etat Francais: *See—*
Melchior, Jean F., 4,125,999, Cl. 60-606.000.

Ethicon, Inc.: *See—*
Cerwin, Robert J., 4,126,221, Cl. 206-63.300.

Etkins, Robert, to Westinghouse Electric Corp. Passive acoustic navigation aid. 4,126,847, Cl. 340-5.00R.

Evans, Robert F., to Smith International, Inc. Rock bit with extended pickup tube. 4,126,194, Cl. 175-340.000.

Evers, William J.: *See—*
Mookherjee, Braja D.; Evers, William J.; and Goossens, Alfred E., 4,126,708, Cl. 426-535.000.

Everswick, David N.: *See—*
Smith, Chester L.; and Everswick, David N., 4,126,039, Cl. 73-167.000.

Ewen, James H., Jr.: *See—*
Carleton, Peter S.; Ewen, James H., Jr.; and Reymore, Harold E., Jr., 4,126,741, Cl. 528-57.000.
Carleton, Peter S.; Ewen, James H., Jr.; and Reymore, Harold E., Jr., 4,126,742, Cl. 528-57.000.

Expert N.V.: *See—*
Oosterling, Pieter A.; and Van Zweeden, Adriaan, 4,126,089, Cl. 100-250.000.

Extranuclear Laboratories, Inc.: *See—*
Siegel, Melvin W., 4,126,781, Cl. 250-281.000.

Exxon Production Research Company: *See—*
Ortloff, John E.; Masciopinto, Anthony J.; and Kirkland, Kerry G., 4,126,336, Cl. 285-136.000.

Facet Enterprises, Inc.: *See—*
Puro, John F., 4,126,215, Cl. 192-84.00C.

Fachbach, Heinz: *See—*
List, Hans; Greier, Josef; Obermayer, Bertram; Fachbach, Heinz; and Skatsche, Othmar, 4,126,115, Cl. 123-198.00E.

Factor, Arnold; and Sannes, Keith N., to General Electric Company. Organopolysiloxane-polycarbonate copolymers. 4,126,740, Cl. 528-29.000.

Fair, Jack E.: *See—*
Gale, Preston L.; and Fair, Jack E., 4,125,926, Cl. 29-156.50R.

Fairbanks, David W., to RCA Corporation. Solar energy heat apparatus. 4,126,121, Cl. 126-270.000.

Fallon, John L.: *See—*
Colglazier, Donald F.; Fallon, John L.; Kollar, Ernest P.; and Mares, Fred R., 4,126,305, Cl. 271-120.000.

Fapiano, Donald J., to General Electric Company. Method and apparatus for providing improved automatic gage control setup in a rolling mill. 4,126,026, Cl. 72-6.000.

Faragher, Raymond F., Jr., to Saturday Knight Ltd. Shower curtain. 4,126,172, Cl. 160-126.000.

Farrell, Weyma B. Baby blanket. 4,125,903, Cl. 2-69.500.

Faubl, Hermann, to Pfizer Inc. Process for 11a-dehalogenation of 11a-halotetracyclines. 4,126,639, Cl. 260-559.0AT.

Federal-Mogul Corporation: *See—*
Babcock, Bryce W.; Reynolds, Mark P.; and Saluja, Kulbir, 4,126,216, Cl. 192-89.00B.

Fein, Michael E.: *See—*
Wedding, Donald K.; Fein, Michael E.; Ernsthausen, Roger E.; and Byrum, Bernard W., Jr., 4,126,807, Cl. 313-188.000.
Wedding, Donald K.; Ernsthausen, Roger E.; Byrum, Bernard W., Jr.; and Fein, Michael E., 4,126,809, Cl. 313-221.000.

Femenias, Raymond H.: *See—*
Witte, Joseph J.; and Femenias, Raymond H., 4,126,861, Cl. 343-13.00R.

Fenish, Robert G.: *See—*
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Fernau, Bernard R.: *See—*
Rosenthal, Alan S.; Fernau, Bernard R.; and Seifer, Stanley, 4,126,780, Cl. 235-458.000.

Ferns, Derek, to Self-Level Covers Aktiengesellschaft. Grating. 4,126,404, Cl. 404-4.000.

Ferree, Roy E.: *See—*
Heck, Willis A.; and Ferree, Roy E., 4,126,453, Cl. 75-257.000.

Ferro, Joseph A.: *See—*
Varacins, Alan J.; Richards, Richard J.; and Ferro, Joseph A., 4,126,040, Cl. 73-293.000.

Fetterer, Gerald F.: *See—*
McLaughlin, Donald W.; and Fetterer, Gerald F., 4,126,766, Cl. 179-18.0BC.

Fetterman, Harold R.: *See—*
Schlossberg, Howard R.; and Fetterman, Harold R., 4,126,832, Cl. 331-94.50C.

Fibelco N.V.: *See—*
Colombo, Ambrogio, 4,125,953, Cl. 38-77.700.

Fidelity Union Trust Company as Executive Trustee under the Sandoz Trust: *See—*
Pedrazzi, Reinhard, 4,126,608, Cl. 260-143.000.

Fike, Claud D. Heating device. 4,126,119, Cl. 126-124.000.

Fike Metal Products Corporation: *See—*
Hinrichs, James O., 4,126,184, Cl. 169-56.000.

Finan, Michael A.: *See—*
Jones, Thomas I.; Graham, Geoffrey; and Finan, Michael A., 4,126,549, Cl. 210-58.000.

Firmenich & Cie: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 4,126,618, Cl. 546-339.000.

Fischer, Karl; Horn, Peter; Eckert, Guenter; and Leppmeier, Franz, to BASF Aktiengesellschaft. Copolyamide and its use for finishing leather and leather substitutes. 4,126,414, Cl. 8-94.210.

Fischer, Leonard: *See—*
McCarthy, John P.; Moyer, John; and Fischer, Leonard, 4,126,704, Cl. 426-304.000.

Fischer, Martin: *See—*
Thil, Lucien; Fischer, Martin; and Kindscher, Wolfgang, 4,126,634, Cl. 562-507.000.

Flaherty, Theodore V., Jr.; Nozemack, Richard J.; and Guidry, Hanson L., to W. R. Grace & Co. Hydrocarbon conversion catalyst manufacture. 4,126,579, Cl. 252-455.00Z.

Flament, Ivon: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 4,126,618, Cl. 546-339.000.

Flinn, William S.: *See—*
Bevilacqua, Frank; Dietrich, Joseph R.; Flinn, William S.; Groves, Malcolm D.; and West, John M., 4,126,767, Cl. 176-36.00R.

Floyd, Don E., to General Mills Chemicals, Inc. N-alkyl polyamines and curing of epoxy resins therewith. 4,126,640, Cl. 260-583.00P.

FMC Corporation: *See—*
Sheetz, Charles E., 4,125,986, Cl. 53-75.000.

Fogle, John L.: *See—*
Skor, Dimitry V.; and Fogle, John L., 4,126,296, Cl. 251-363.000.

Foote Mineral Company: *See—*
Jacob, Susan R.; and Brown, Patrick M., 4,126,666, Cl. 423-561.00A.

Ford, Donald T., to Arnold Engineering Company. Coating selected areas of a substrate. 4,126,511, Cl. 156-660.000.

Ford Motor Company: *See—*
Donakowski, William A.; and Morgan, John R., 4,126,483, Cl. 134-3.000.
Gould, Harry J., 4,126,835, Cl. 333-21.00A.

Forknall, John P.: *See—*
Hamblin, Ronald F.; and Forknall, John P., 4,126,362, Cl. 308-201.000.

Formflo Limited: *See—*
Tarrant, Brian D., 4,126,064, Cl. 82-1.00C.

Forssberg, Knut S. E.; and Kopp, Karl D. Method of and apparatus for removing aerosols of hydrocarbons from a gas stream. 4,126,433, Cl. 55-74.000.

Forsyth, John R., to Chrysler Corporation. Transmission reverse interlock. 4,126,055, Cl. 74-476.000.

Foseco Trading AG.: *See—*
Massin, Daniel M., 4,126,301, Cl. 266-280.000.

Fournier, Georges; and McGeoch, Malcolm. Lasing device and method using mercury and cadmium or ammonia. 4,126,890, Cl. 331-94.50G.

Frank J. Zamboni & Co., Inc.: *See—*
Zamboni, Richard F., 4,125,915, Cl. 15-21.00E.

Frank, Michael B., to Uniforms To You & Co. Fits all sizes wrap-around garment. 4,125,902, Cl. 2-74.000.

Franklin Steel Company: *See—*
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Franz, Gerhard: *See—*
Scholz, Bernhard; Obenaus, Fritz; Franz, Gerhard; Erberich, Hans-Jurgen; and Reitemeyer, Heinz-Otto, 4,126,748, Cl. 560-239.000.

Freedman, Robert P.: *See—*
Pappas, Dennis G.; Baum, Matthew C.; Small, Samuel N.; Adams, Robert T.; and Freedman, Robert P., 4,126,772, Cl. 200-61.250.

Freeport Minerals Company: *See—*
Cognevich, Dimitry J., 4,126,551, Cl. 210-83.000.

Frerking, Marvin E., to Rockwell International Corporation. Non-linear digital-to analog conversion. 4,126,853, Cl. 340-347.0DA.

Freund, Edouard: *See—*
Sugier, Andre; Courty, Philippe; and Freund, Edouard, 4,126,581, Cl. 252-463.000.

Frey, Egon: *See—*
Hormann, Bernt O.; and Frey, Egon, 4,126,820, Cl. 318-468.000.

Frey, Volker: *See—*
Muller, Horst; Schmidt, Edgar; Frey, Volker; and Riedle, Rudolf, 4,126,630, Cl. 260-448.20E.

Frito-Lay, Inc.: *See—*
Hilton, Barney W., 4,126,706, Cl. 426-438.000.

Fritsch, Robert A.: *See—*
Kay, Christopher G.; and Fritsch, Robert A., 4,125,974, Cl. 52-115.000.

Fritts, David H., to United States of America, Air Force. Porous electrode primary battery having state of charge sensing electrode. 4,126,735, Cl. 429-91.000.

Fritzler, Ulrich M. Image stabilization system for continuous film scanning apparatus. 4,126,386, Cl. 352-105.000.

Frost, Harold M.: *See—*
Sethares, James C.; and Frost, Harold M., 4,126,047, Cl. 73-505.000.

Frumkin, Semen P.: *See—*
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Fry, Richard L., to Lucas Industries Limited. Signal failure circuit for automatic transmissions. 4,126,061, Cl. 74-866.000.

Fudger, Shirley L. W.: *See—*
Davies, John; and Fudger, Shirley L. W., 4,126,021, Cl. 69-6.500.

Fuji Film Co., Ltd.: *See—*
Ikeda, Mitsuru; Ikeda, Teppei; Teramoto, Yoshihiko; Yasutake, Masatoshi; and Nakamine, Yoshimi, 4,126,032, Cl. 73-15.00B.

Fuji Photo Film Co., Ltd.: *See—*
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Miyazako, Takushi; Toriya, Itsuki; and Hirose, Masuhiko, 4,126,467, Cl. 96-87.00A.
Okishi, Yoshio, 4,126,460, Cl. 96-35.100.
Sakai, Takeo; and Ogawa, Tadashi, 4,126,472, Cl. 96-110.000.

Fujie, Kunio; Otsuka, Yoshinori; Kunugi, Yoshifumi; and Kudo, Mituo, to Hitachi, Ltd. Air cooling apparatus. 4,126,015, Cl. 62-284.000.

Fujii, Kyoichi: *See—*
Tamaki, Kentaro; Naito, Naoki; Nishimura, Fumio; Fujii, Kyoichi; and Nakamura, Nobuo, 4,126,686, Cl. 424-267.000.

Fujimori, Nobuyoshi: *See—*
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Fujitsu Limited: *See—*
Maeno, Chiaki, 4,126,841, Cl. 335-154.000.

Fukunaga, Yasuo: *See—*
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Fulconis, Thierry; and Ginglinger, Bernard, to Pont-a-Mousson S.A. Process for producing products of cross-linked thermoplastic material. 4,126,661, Cl. 264-209.000.

Fuller, Robert R., to Westinghouse Electric Corp. Hydrolysis column for an ammonium diuranate conversion line processing system. 4,126,420, Cl. 422-162.000.

Funk, Harald F. System for treating and recovering energy from exhaust gases. 4,126,000, Cl. 60-648.000.

Gabillard, Jean-Pierre: *See—*
Bytniewski, Joseph; Chovet, Patrice; Gabillard, Jean-Pierre; and Prost, Roger, 4,126,017, Cl. 62-514.0JT.

Gadbois, George S.: *See—*
Moscony, John J.; and Gadbois, George S., 4,126,510, Cl. 156-626.000.

Gadea, Ramon A., to American Cyanamid Company. Inhibition of crystal formation of 1,2-dimethyl-3,5-diphenylpyrazolium methyl sulfate in aqueous solutions with an acrylamide polymer. 4,126,443, Cl. 71-92.000.

Gado, Victor C., to Holland, William R., a part interest. Method for curing tires and the like. 4,126,657, Cl. 264-85.000.

Gale, Preston L.; and Fair, Jack E., to Caterpillar Tractor Co. Method of making aluminum piston with reinforced piston ring groove. 4,125,926, Cl. 29-156.50R.

Galer, Edgar; and Holt, Paul S., to E. H. Galer and Co. Limited. Frame pinning device. 4,126,259, Cl. 227-30.000.

Galer, Herbert W., to United States Steel Corporation. Plastic lids and pails. 4,126,246, Cl. 220-304.000.

Galinke, Joachim: *See—*
Gruber, Werner; Galinke, Joachim; and Wegemund, Bernd, 4,126,737, Cl. 526-270.000.

Gallagher, Lawrence E.: *See—*
Derr, Walter R., Jr.; Gallagher, Lawrence E.; Haddad, James H.; McGovern, Stephen J.; Schatz, Klaus W.; and Smith, Fritz A., 4,126,539, Cl. 208-108.000.

Galloway, James V. Aquarium and method of making same. 4,126,102, Cl. 119-5.000.

Galvin, John S.: *See—*
Curtis, Michael; Davies, Richard L.; and Galvin, John S., 4,126,586, Cl. 252-524.000.

Gander, Robert J.; and Gurney, John A., to Johnson & Johnson. Retinoic acid derivatives in the treatment of acne. 4,126,693, Cl. 424-282.000.

Gander, Robert J.; and Gurney, John A., to Johnson & Johnson. Retinoic acid derivatives in the treatment of acne. 4,126,697, Cl. 424-305.000.

Gander, Robert J.; and Gurney, John A., to Johnson & Johnson. Retinoic acid derivatives in the treatment of acne. 4,126,698, Cl. 424-305.000.

Gander, Robert J.; and Gurney, John A., to Johnson & Johnson. Retinoic acid derivatives for the treatment of acne. 4,126,699, Cl. 424-305.000.

Ganellin, Charon R.: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Parsons, Michael E., 4,126,670, Cl. 424-9.000.

Ganz, Joseph; and Siris, Burt J., to Sirco International Corporation. Multi-purpose pocket-size carrying case. 4,126,168, Cl. 150-35.000.

Gard, Inc.: *See—*
Varacins, Alan J.; Richards, Richard J.; and Ferro, Joseph A., 4,126,040, Cl. 73-293.000.

Gardner, William E., to Hoffmann-La Roche Inc. Manufacture of pharmaceutical dosage forms. 4,126,503, Cl. 156-184.000.

Garlock Inc.: *See—*
Bainard, Dean R., 4,126,317, Cl. 277-9.500.
Cather, Douglas A., Jr., 4,126,316, Cl. 277-1.000.
Pendleton, Darrell D., 4,126,320, Cl. 277-152.000.

Garnish, Edward W.; and Wilson, Robert G., to Ciba-Geigy Corporation. Adhesive compositions. 4,126,505, Cl. 156-330.000.

Garwood, William E.: *See—*
Caesar, Philip D.; Garwood, William E.; Peters, Alan W.; and Wise, John J., 4,126,644, Cl. 260-676.00R.

Gaulliard, Jean-Michel: *See—*
Trinh, Stephane; Moraly, Alain; and Gaulliard, Jean-Michel, 4,126,678, Cl. 424-217.000.

Gautschi, Fritz: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 4,126,618, Cl. 546-339.000.

Gaylord, Norman G., to Borg-Warner Corporation. Copolymers of 5-norbornene 2,3-dicarboxylic anhydride and maleic anhydride. 4,126,738, Cl. 526-271.000.

Geary, James L. Embedded arrowhead retrieving and multipurpose tool. 4,125,927, Cl. 29-254.000.

Geberth, John D., Jr. Adjustable spray tip. 4,126,272, Cl. 239-455.000.

Gehrig, Neil E.; Broussard, Fred; and Barborek, Frank J., to Gulf Oil Corporation. Canister for aqueous gel explosive primer. 4,126,239, Cl. 215-6.000.

Geiersbach, Allois F.: *See—*
Downing, Terry R.; and Geiersbach, Allois F., 4,126,237, Cl. 214-674.000.

Geisthoff, Hubert: *See—*
von Allworden, Wilhelm; and Geisthoff, Hubert, 4,126,057, Cl. 74-586.000.

Gelbein, Abraham P.: *See—*
Kwon, Joon T.; and Gelbein, Abraham P., 4,126,526, Cl. 204-98.000.

Gendron, George J.; and Nelson Holland, Henry A., to Raymond International Inc. Gas discharge type underwater hammer with liquid purge and reflood control. 4,126,191, Cl. 173-1.000.

General Electric Company: *See—*
Ashley, Eugene, 4,126,078, Cl. 89-7.000.
Baertsch, Richard D., 4,126,852, Cl. 340-347.0DA.
Bobo, Melvin; Heyser, James W.; Shotts, L. D.; and Wisbey, Raymond W., 4,126,405, Cl. 415-115.000.
Borman, Willem F. H.; and Liberti, Frank N., 4,126,592, Cl. 260-22.00M.
Cox, Charles W., 4,126,810, Cl. 313-318.000.
Factor, Arnold; and Sannes, Keith N., 4,126,740, Cl. 528-29.000.
Fapiano, Donald J., 4,126,026, Cl. 72-6.000.
Kolwaite, John S., 4,126,863, Cl. 343-702.000.
Mathur, Pracheeschwar S., 4,126,029, Cl. 72-69.000.
Molari, Richard Edgar, Jr., 4,126,730, Cl. 428-412.000.

General Mills Chemicals, Inc.: *See—*
Floyd, Don E., 4,126,640, Cl. 260-583.00P.

General Motors Corporation: *See—*
McQuinn, Ted M., 4,126,154, Cl. 137-625.690.

General Refractories Company: *See—*
Talley, Raymond W.; Henrichsen, Ray A.; and Bakker, Wate T., 4,126,474, Cl. 106-63.000.

Genrikh, Georgy A.; Nikonets, Leonid A.; Khrusch, Petr R.; Oleinik, Vladimir P.; and Neiman, Alexandr A. High-voltage network for areas of increased intensity of icing. 4,126,792, Cl. 307-112.000.

Georgi, Wolfgang: *See—*
Lindner, Heinz; Georgi, Wolfgang; Muller, Lisbet; Stopp, Fritz; and Oehm, Werner, 4,126,019, Cl. 66-84.00R.

Gergen, William P.; and Davison, Sol, to Shell Oil Company. Multicomponent nitrile resin-block copolymer-polymer blends. 4,126,600, Cl. 260-42.180.

Gernert, Herbert, to Agfa-Gevaert Aktiengesellschaft. Method of stabilizing photographic silver halide emulsion layers. 4,126,463, Cl. 96-67.000.

Gerwin, Reinhard, to Eberspacher, J. Fuel burner. 4,126,410, Cl. 431-265.000.

Getches, Nancy: *See—*
Vail, Dottie J.; and Getches, Nancy, 4,125,908, Cl. 5-86.000.

Getselev, Zinovy N. Electromagnetic mould for the continuous and semicontinuous casting of hollow ingots. 4,126,175, Cl. 164-147.000.

Ghosh, Subrata, to Chrysler Corporation. Nickel-base superalloy. 4,126,495, Cl. 148-32.000.

Giannetti, Enrico R. Tool post. 4,126,067, Cl. 82-36.00A.

Gilbert, Russell T.; and Pfau, Irwin B., to California Injection Molding Co., Inc. Injection mold for elongated, hollow articles. 4,126,291, Cl. 249-63.000.

Ginglinger, Bernard: *See—*
Fulconis, Thierry; and Ginglinger, Bernard, 4,126,661, Cl. 264-209.000.

Giovanola Freres SA: *See—*
Bayer, Peter, 4,126,517, Cl. 195-109.000.

Gisser, Henry; and Mertwoy, Helen, to United States of America, Army. Anionically polymerized copolymers of methyl α-N-alkylacrylate and methyl methacrylate and method of making same. 4,126,736, Cl. 526-173.000.

Gittemeier, Jury P.: *See—*
Bello, Mark B.; Gittemeier, Jury P.; Komyak, Nikolai I.; Levitin, Anatoly I.; Stolin, Valery I.; Frumkin, Semen P.; Vijunnik, Viktor S.; Leites, Anatoly B.; Lyakhov, Jury V.; Novikov, Vladlen V.; Patsiansky, Felix A.; Semyanov, Alexandr I.; and Yaroshevich, Nikolai M., 4,126,226, Cl. 209-589.000.

Glory Kogyo Kabushiki Kaisha: *See—*
Ozaki, Ichiro, 4,126,146, Cl. 133-3.00A.

Godfrey, William T.; and Paull, Edith R., to Belling & Lee Limited. Electrical fuse holder. 4,126,368, Cl. 339-91.00R.

Goel, Om P.; and Pearlman, William M., to Warner-Lambert Company. Process for the production of 2,2-dimethyl-5-(2,5-xylyloxy)valeric acid. 4,126,637, Cl. 562-421.000.

Goetze, Edward S.; and Kennedy, Frank, to United States Steel Corporation. Method of producing composite metal pipe. 4,125,924, Cl. 29-148.40D.

Goffinet, Pierre C. E.; and Leclercq, Jean-Pierre C. I. M., to Procter & Gamble Company, The. Textile treatment compositions. 4,126,562, Cl. 252-8.800.

Golden, Jeffry: *See—*
Kapetanakos, Christos A.; and Golden, Jeffry, 4,126,806, Cl. 313-155.000.

Golovkin, Engels K.: *See—*
Kim, Vladimir A.; Samokhvalov, Jury I.; Petrov, Boris M.; Golovkin, Engels K.; and Artamonova, Galina N., 4,126,507, Cl. 156-415.000.

Gommel, Karl-Werner; Michl, Uwe; and Radtke, Hans, to Jenoptik Jena G.m.b.H. Manipulation device for precision adjustments including a double microscope having adjustable optical axes. 4,126,376, Cl. 350-90.000.

Goodman, Lawrence A.; Hang, Kenneth W.; and Hall, William B., to RCA Corporation. Self-illuminated liquid crystal display device. 4,126,384, Cl. 350-345.000.

Goossens, Alfred E.: *See—*
Mookherjee, Braja D.; Evers, William J.; and Goossens, Alfred E., 4,126,708, Cl. 426-535.000.

Gordon, John A., to National Research Development Corporation. Position indicators. 4,126,760, Cl. 178-18.000.

Gossling, Christopher C. Electrically illuminated push-buttons and indicators. 4,126,774, Cl. 200-314.000.

Gothard, John F., Jr.: *See—*
Kreuzer, John A.; and Gothard, John F., Jr., 4,126,312, Cl. 273-105.200.

Goto, Astuo, to Olympus Optical Co., Ltd. Zoom optical system for microscopes. 4,126,377, Cl. 350-184.000.

Gotoda, Katsuhiko: *See—*
Nishihama, Hitoshi; Gotoda, Katsuhiko; Motomura, Minoru; Nakajima, Takanobu; and Aizawa, Tatsuo, 4,126,100, Cl. 118-658.000.

Gottwalt, David J.: *See—*
Smith, J. Weston; and Gottwalt, David J., 4,126,167, Cl. 150-8.000.

Goudriaan, Frans; and Van Klinken, Jakob, to Shell Oil Company. Process for the conversion of hydrocarbons. 4,126,538, Cl. 208-80.000.

Gould, Harry J., to Ford Motor Company. Balanced phase septum polarizer. 4,126,835, Cl. 333-21.00A.

Gould Inc.: *See—*
Reighter, David H., 4,126,598, Cl. 260-37.0EP.

Goullioud, Pierre: *See—*
Monzie, Pierre; Chaunis, Serge; Goullioud, Pierre; and Laine, Patrick, 4,126,656, Cl. 264-83.000.

Gowing Engineering Limited: *See—*
Day, Edward J., 4,126,357, Cl. 298-1.00A.

Graber Industries, Inc.: *See—*
Channel, Glenn L., 4,126,189, Cl. 172-456.000.

Graham, Geoffrey: *See—*
Jones, Thomas I.; Graham, Geoffrey; and Finan, Michael A., 4,126,549, Cl. 210-58.000.

Gram, Hans, to Brodrene Gram A/S. Apparatus for dispensing granular material. 4,126,250, Cl. 222-242.000.

Grammes, Helmut: *See—*
Dibowski, Gunter; and Grammes, Helmut, 4,126,207, Cl. 184-1.00C.

Granges Oxelosund Jarnverk AB: *See—*
Karlsson, Per-Olle, 4,126,491, Cl. 148-9.500.

Graupe, Daniel; Cohn, David L.; and Causey, G. Donald. Method of and means for processing an audio frequency signal to conceal intelligility. 4,126,761, Cl. 179-1.50R.

Grawey, Charles E., to Caterpillar Tractor Co. Method for mounting a closed torous tire on a rim. 4,125,930, Cl. 29-450.000.

Gray, Robert L.; and Keller, Kenneth D., to Gray, Robert L.; and Keller, Kenneth D. Scales annunciator. 4,126,856, Cl. 340-529.000.

Greber, Gerd: *See—*
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,126,619, Cl. 260-326.00C.

Green, James W.: *See—*
Waller, George W., 4,126,012, Cl. 405-157.000.

Greenwald, Richard B., to Polaroid Corporation. Thioether substituted silver halide solvents. 4,126,459, Cl. 96-29.00R.

Greier, Josef: *See—*
List, Hans; Greier, Josef; Obermayer, Bertram; Fachbach, Heinz; and Skatsche, Othmar, 4,126,115, Cl. 123-198.00E.

Greiner, Leonard. Vacuum interconnect for heating and cooling unit. 4,126,016, Cl. 62-457.000.

Grenzow, Rolland L., to Bell Telephone Laboratories, Incorporated. Portable automatic number outpulser. 4,126,768, Cl. 179-90.00B.

Grgic, Ivica: *See—*
Schneider, Fritz W.; and Grgic, Ivica, 4,126,399, Cl. 366-159.000.

Griffin, Richard J. Barrier device, packaging and method. 4,126,223, Cl. 206-445.000.

Griffin, Thomas S.: *See—*
Shen, Kelvin K.; and Griffin, Thomas S., 4,126,442, Cl. 71-86.000.

Grimes, Larry R. Fastening mechanism. 4,125,920, Cl. 24-201.00R.

Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., to Richardson-Merrell Inc. Substituted cycloalkyl lactamimides. 4,126,611, Cl. 260-239.00B.

Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., to Retter, Eugene O.; and Richardson-Merrell Inc. Substituted cycloalkyl lactamimides. 4,126,612, Cl. 260-239.00B.

Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., to Richardson-Merrell Inc. Substituted cycloalkyl lactamimides. 4,126,613, Cl. 260-239.00B.

Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., to Richardson-Merrell Inc. Substituted cycloalkyl lactamimides. 4,126,621, Cl. 260-329.0AM.

Grosboll, Martin P.; Edison, Robert R.; and Dresser, Thorpe, to Atlantic Richfield Company. Apparatus and process for distributing a mixed phase through solids. 4,126,540, Cl. 208-146.000.

Grossman, David G., to Corning Glass Works. Aluminous quartz ceramics and method. 4,126,476, Cl. 106-39.700.

Grossman, Harold, to Montclair Research Corporation. Filter and cigarette including a filter. 4,126,141, Cl. 131-9.000.

Groves, Malcolm D.: *See—*
Bevilacqua, Frank; Dietrich, Joseph R.; Flinn, William S.; Groves, Malcolm D.; and West, John M., 4,126,767, Cl. 176-36.00R.

Gruber, Werner; Galinke, Joachim; and Wegemund, Bernd, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Anaeorbically hardening adhesives and sealants based on (meth)acrylic esters containing reaction products of glycidyl-(meth)acrylate and half esters containing carbonate groups. 4,126,737, Cl. 526-270.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
Blosser, Carl J., 4,126,211, Cl. 188-32.000.
Calder, John A.; Rovnyak, Richard M.; and Lee, David Q., 4,126,765, Cl. 179-18.0AH.
McLaughlin, Donald W.; and Fetterer, Gerald F., 4,126,766, Cl. 179-18.0BC.

GTE Sylvania Incorporated: *See—*
Barouh, Roger; and Nissen, Alex, 4,126,842, Cl. 335-213.000.
Coppock, Richard A., 4,126,834, Cl. 332-7.510.
Puhak, Peter G., 4,126,371, Cl. 339-144.00T.
Sullivan, William B.; Tresidder, James M., Jr.; and Molnar, Gabor V., 4,126,860, Cl. 343-5.0NA.

Guidry, Hanson L.: *See—*
Flaherty, Theodore V., Jr.; Nozemack, Richard J.; and Guidry, Hanson L., 4,126,579, Cl. 252-455.00Z.

Guignard, Gelas S.; and Bertin, Joseph E. Wood lathe chisel. 4,126,165, Cl. 142-56.000.

Gulf Oil Corporation: *See—*
Gehrig, Neil E.; Broussard, Fred; and Barborek, Frank J., 4,126,239, Cl. 215-6.000.

Gunjima, Tomoki: *See—*
Ukihashi, Hiroshi; Asawa, Tatsuro; Yamabe, Masaaki; Gunjima, Tomoki; and Miyake, Haruhisa, 4,126,588, Cl. 521-31.000.

Gurney, John A.: *See—*
Gander, Robert J.; and Gurney, John A., 4,126,693, Cl. 424-282.000.
Gander, Robert J.; and Gurney, John A., 4,126,697, Cl. 424-305.000.
Gander, Robert J.; and Gurney, John A., 4,126,698, Cl. 424-305.000.
Gander, Robert J.; and Gurney, John A., 4,126,699, Cl. 424-305.000.

Gurtler, Wendell. Chemical inductor and can crusher. 4,126,160, Cl. 141-91.000.

H. C. Price Co.: *See—*
Christie, Howard W.; and Hodge, Walter D., 4,126,718, Cl. 427-286.000.

H. H. Robertson Company: *See—*
Michlovic, John J., 4,125,977, Cl. 52-220.000.

Haak, Willard J.; Marsden, Howard A.; and Stemler, Orrin A., to Caterpillar Tractor Co. Attitude control for implement. 4,126,083, Cl. 91-176.000.

Haddad, James H.: *See—*
Derr, Walter R., Jr.; Gallagher, Lawrence E.; Haddad, James H.; McGovern, Stephen J.; Schatz, Klaus W.; and Smith, Fritz A., 4,126,539, Cl. 208-108.000.

Hafner, Gunther; and Pfeffer, Victor, to Daimler-Benz Aktiengesellschaft. Otto internal combustion engine. 4,126,111, Cl. 123-122.00E.

Haggerty, William N.: *See—*
Richardson, Tom A.; Haggerty, William N.; and Krautz, Fred G., 4,126,729, Cl. 428-389.000.

Hagiwara, Hiroshi, to Research Corporation. Apparatus and method for treating waste-containing liquors. 4,126,545, Cl. 210-14.000.

Haines, Robert S., to International Business Machines Corporation. Process for treating chromium dioxide. 4,126,714, Cl. 427-127.000.

Hairegenics, Inc.: *See—*
Miller, Paul W., 4,126,124, Cl. 128-1.00R.

Haist, Grant M.: *See—*
Pupo, David A.; Ciurca, Samuel J., Jr.; Haist, Grant M.; and King, James R., 4,126,461, Cl. 96-50.00R.

Hait, Paul W., to Aroma Taste, Inc. Process for making a dehydrated protein snack food. 4,126,705, Cl. 426-314.000.

Hall, Charles M.; Johnson, Herbert G.; and Wright, John B., to Upjohn Company, The. di-Tham salt of 10-cl,1,4,6,9 tetrahydro-5-methyl 4,6 dioxopyrido[3,2-g]quinoline-2,8-dicarboxylate. 4,126,617, Cl. 546-81.000.

Hall, Frederick F. Solar energy collector including a weightless balloon with sun tracking means. 4,126,123, Cl. 126-271.000.

Hall, John B.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,569, Cl. 252-89.00R.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,570, Cl. 252-89.00R.

Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,571, Cl. 252-108.000.

Hall, William B.: *See—*
Goodman, Lawrence A.; Hang, Kenneth W.; and Hall, William B., 4,126,384, Cl. 350-345.000.

Hamada, Masa: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; and Hamada, Masa, 4,126,606, Cl. 260-112.50R.

Hamada, Masato; Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; and Yamamoto, Fumihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Improved method for preparation of cation exchange membranes. 4,126,589, Cl. 521-31.000.

Hamblin, Ronald F.; and Forknall, John P., to SKF Industrial Trading and Development Company B. V. Bearing cages with flexible wipers to prevent accumulation of foreign matter between ball pockets. 4,126,362, Cl. 308-201.000.

Hameier, Martin: *See—*
Wolowski, Eckard; and Hameier, Martin, 4,126,431, Cl. 55-23.000.

Hammann, Ingeborg: *See—*
Hoffmann, Hellmut; and Hammann, Ingeborg, 4,126,677, Cl. 424-200.000.
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,126,690, Cl. 424-273.00P.

Handler, Milton E.; and Sylvan, Richard, to Hirsh Company. Rotatable, multiple storage bin assembly. 4,126,366, Cl. 312-252.000.

Hang, Kenneth W.: *See—*
Goodman, Lawrence A.; Hang, Kenneth W.; and Hall, William B., 4,126,384, Cl. 350-345.000.

Hansen, Kenneth N.; and Ruka, Armand J., to Allis-Chalmers Corporation. Bottom serviced air cleaner for a motor vehicle. 4,126,199, Cl. 180-54.00A.

Hansen, Torben C.; and Ringsholt, Thomas. Structural building components and method for production on the basis of laterite. 4,126,475, Cl. 106-118.000.

Hanson, Richard E.; and Tetrev, Ronald E., to RCA Corporation. Compression test using battery voltage waveform during cranking. 4,126,037, Cl. 73-116.000.

Harada, Susumu; and Endo, Kunio, to Nippondenso Co., Ltd. Electronic fuel injection system. 4,126,107, Cl. 123-32.0EH.

Hargis, Robert L., to Aluminum Company of America. Method of treating a gas. 4,126,432, Cl. 55-71.000.

Harjar, Martin J.; and Hastings, Donald R., to Nordson Corporation. Packingless bellows seal. 4,126,321, Cl. 277-113.000.

Harley, Andrew W. Security device for limiting the opening movement of a door. 4,126,342, Cl. 292-269.000.

Harman, Douglas G.: *See—*
Brown, Philip S.; and Harman, Douglas G., 4,125,937, Cl. 29-727.000.

Harnischfeger Corporation: *See—*
Kay, Christopher G.; and Fritsch, Robert A., 4,125,974, Cl. 52-115.000.

Hart, Cornelis M.: *See—*
Lohstroh, Jan; Koomen, Joannes J. M.; Salters, Roelof H. W.; and Hart, Cornelis M., 4,126,899, Cl. 365-182.000.

Hart, Edwin R. Method of processing grain. 4,126,707, Cl. 426-462.000.

Hartmann, Eduard: *See—*
Hoene, Richard; Bankowsky, Heinz-Hilmar; Hartmann, Eduard; Schenck, Hans-Uwe; and Boerzel, Paul, 4,126,739, Cl. 526-272.000.

Hartmann, Klaus; and von Braitenberg, Meinhard, to Erwin Sick Gesellschaft mit Beschrankter Haftung, Optik-Elektronic. Device for the non-dispersive optical determination of the concentration of gas and smoke components. 4,126,396, Cl. 356-434.000.

Hartness, Robert G.: *See—*
Hartness, Thomas P.; and Hartness, Robert G., 4,126,163, Cl. 141-269.000.

Hartness, Thomas P.; and Hartness, Robert G. Centering device for bottle filling machines. 4,126,163, Cl. 141-269.000.

Hartung, Kuhn & Co Maschinenfabrik GmbH: *See—*
Horster, Lothar, 4,126,520, Cl. 202-248.000.

Hashimoto, Hiroyoshi: *See—*
Takahara, Ichiro; and Hashimoto, Hiroyoshi, 4,126,886, Cl. 360-37.000.

Hashimoto, Tetsuo; and Fukunaga, Yasuo, to Bunker Ramo Corporation. Outer conductor attachment apparatus for coaxial connector. 4,126,372, Cl. 339-177.00E.

Hastings, Donald R.: *See—*
Harjar, Martin J.; and Hastings, Donald R., 4,126,321, Cl. 277-113.000.

Hastings, Thomas C., to Coleman Company, Inc., The. Portable single burner campstove. 4,126,117, Cl. 126-44.000.

Hatch Associates Ltd.: *See—*
Twigge-Molecey, Christopher F. M., 4,126,425, Cl. 23-294.00R.

Hattori, Norihisa: *See—*
Otera, Junzo; Makimoto, Tsutomu; Shinoda, Wataru; and Hattori, Norihisa, 4,126,567, Cl. 252-62.540.

Hauptschein, Murray: *See—*
Toukan, Sameeh S.; and Hauptschein, Murray, 4,126,633, Cl. 260-501.120.

Hayakawa, Toshio; and Mitsugi, Itaru, to Matsushita Electric Industrial Co., Ltd. Channel selector. 4,126,051, Cl. 74-10.410.

Hayashi, Yoshiaki; and Fujimori, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and reproducing apparatus of rotating head type. 4,126,888, Cl. 360-85.000.

Haylock, John C.: *See—*
Coiner, Marsha H.; Haylock, John C.; Newland, Julian H.; and Schwartz, Judd L., 4,126,415, Cl. 8-115.500.

Haynes, Freddie J. Modular fireplace assembly. 4,126,118, Cl. 126-121.000.

Heck, Willis A.; and Ferree, Roy E., to ESM, Inc. Composition for a fluidizing flux in the production of iron and steel. 4,126,453, Cl. 75-257.000.

Heinze, Helga: *See—*
Traubel, Harro; and Heinze, Helga, 4,126,413, Cl. 8-94.260.

Heitman, David L.: *See—*
Davis, Donald G.; Wippler, John; and Heitman, David L., 4,126,131, Cl. 128-142.400.

Helena Rubinstein, Inc.: *See—*
Mausner, Jack J., 4,126,674, Cl. 424-31.000.

Henderson, Donald L., Sr.: *See—*
Baldwin, Steven M.; Henderson, Donald L., Sr.; and Karp, Joel A., 4,125,933, Cl. 29-571.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Reinwald, Elmar; Schwuger, Milan J.; and Smolka, Heinz, 4,126,574, Cl. 252-179.000.

Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See—*
Conrad, Jens; Schaper, Ulf-Armin; and Bruns, Klaus, 4,126,585, Cl. 252-522.000.
Gruber, Werner; Galinke, Joachim; and Wegemund, Bernd, 4,126,737, Cl. 526-270.000.

Henrichsen, Ray A.: *See—*
Talley, Raymond W.; Henrichsen, Ray A.; and Bakker, Wate T., 4,126,474, Cl. 106-63.000.

Hensel, John C.: *See—*
Penniman, Richard E.; and Hensel, John C., 4,126,402, Cl. 402-53.000.

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Sanczuk, Stefan; and Hermans, Hubert K. F., 4,126,689, Cl. 424-267.000.

Hern, John F., to Massey-Ferguson, Inc. Vehicle control box module. 4,126,202, Cl. 180-89.120.

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Hewlett-Packard Company: *See—*
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Hickner, Richard A.; and Bredeweg, Corwin J., to Dow Chemical Company, The. Halohydrin thioethers and method of preparation. 4,126,746, Cl. 544-219.000.

Hicks, Alan A.; Breslow, Jeffrey D.; and Jaworski, Eugene, to Marvin Glass & Associates. Rotatable target game device. 4,126,309, Cl. 273-95.00R.

Higgins, Robert D.; and Schwehr, Richard A., to Towmotor Corporation. Mast mounting. 4,126,209, Cl. 187-1.00R.

Hill, Jeremy R. Keyboard musical instrument. 4,126,070, Cl. 84-1.010.

Hill, John A., to Johns-Manville Corporation. Perlitic insulating board. 4,126,512, Cl. 162-171.000.

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Hinman, Frank, Jr. Self-standing collapsible urinary drainage bag. 4,126,135, Cl. 128-275.000.

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Koontz, Paul G.; Wright, Richard L.; and Cantu, Arthur M., 4,126,788, Cl. 250-481.000.

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Handler, Milton E.; and Sylvan, Richard, 4,126,366, Cl. 312-252.000.

Hitachi, Ltd.: *See*—
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Fujie, Kunio; Otsuka, Yoshinori; Kunugi, Yoshifumi; and Kudo, Mituo, 4,126,015, Cl. 62-284.000.
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Tamaki, Yoichi; Isomae, Seiichi; Ogirima, Masahiko; Shintani, Akira; and Maki, Michiyoshi, 4,126,880, Cl. 357-54.000.
Usami, Katsuhisa; and Ishikawa, Isao, 4,126,782, Cl. 250-305.000.
Yanagisawa, Syozo; and Itoh, Tomo, 4,126,303, Cl. 267-34.000.

Hjelmner, Ulf R.; and Larsson, Hans F., to Rederiaktiebolaget Nordstjernan. Method for the filtration of a suspension or emulsion. 4,126,546, Cl. 210-19.000.

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Lovely, John W.; and Hobbs, Robert N., 4,125,967, Cl. 51-105.00R.

Hodge, Walter D.: *See*—
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Hodgkins, David H., to Stanadyne, Inc. Fuel oil filter. 4,126,557, Cl. 210-249.000.

Hoechst Aktiengesellschaft: *See*—
Moraw, Roland, 4,126,373, Cl. 350-3.610.

Hoelzinger, Walther J., to Boise Cascade Corporation. Apparatus for forming multi-flute-layer corrugated board. 4,126,508, Cl. 156-512.000.

Hoene, Richard; Bankowsky, Heinz-Hilmar; Hartmann, Eduard; Schenck, Hans-Uwe; and Boerzel, Paul, to BASF Aktiengesellschaft. Copolymers, having a uniform structure, of cyclic dienes and their use. 4,126,739, Cl. 526-272.000.

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Bottner, Manfred; and Schluter, Wilhelm, 4,126,361, Cl. 308-174.000.

Hoffmann, Hellmut; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O,S-dialkyl-O-(1-cyanoalkyl-3-substituted)-pyrazol(5)yl-thionothiolphosphoric acid esters. 4,126,677, Cl. 424-200.000.

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Dabal, Dennis J.; and Williams, Joseph J., 4,126,502, Cl. 156-184.000.
Gardner, William E., 4,126,503, Cl. 156-184.000.
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von Basse, Paul-Werner; and Hofmann, Rudiger, 4,126,881, Cl. 357-55.000.

Hogan, Philip J.; and Jennings, James R., to Imperial Chemical Industries Limited. Dimerization process. 4,126,632, Cl. 260-465.80D.

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Tengzelius, Jan R.; and Svensson, Lars-Erik, 4,126,452, Cl. 75-251.000.

Hogue, Donald E. Pump housing sling. 4,126,347, Cl. 294-74.000.

Hohenstein, George. Securing apparatus for golf head covers. 4,126,166, Cl. 150-1.50R.

Holland, William R.: *See*—
Gado, Victor C., 4,126,657, Cl. 264-85.000.

Holleran, Louis M.; and Sandor, Sylvester R., to Corning Glass Works. Ceramic decalcomania. 4,126,728, Cl. 428-204.000.

Hollister, Robert H.; Crockett, Jerry W.; Younger, Harold R., Jr.; and Ricketts, Garland B., to Westinghouse Electric Corp. Electrical inductive apparatus. 4,126,844, Cl. 336-198.000.

Holmes, Gordon W., to Professional Packaging Limited. Produce containers. 4,126,265, Cl. 229-32.000.

Holt, Paul S.: *See*—
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Homeyer, Bernhard: *See*—
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Honeywell Information Systems Inc.: *See*—
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Hooker Chemicals & Plastics Corp.: *See*—
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Hoover Ball and Bearing Company: *See*—
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Hopeman Brothers, Inc.: *See*—
Shiflet, Frank L., 4,126,725, Cl. 428-110.000.

Hopkins, Ben R. Ice shield for micro-wave antenna. 4,126,864, Cl. 343-704.000.

Hormann, Bernt O.; and Frey, Egon, to Daimler-Benz Aktiengesellschaft. Lowerable antenna for radio receivers. 4,126,820, Cl. 318-468.000.

Horn, Peter: *See*—
Fischer, Karl; Horn, Peter; Eckert, Guenter; and Leppmeier, Franz, 4,126,414, Cl. 8-94.210.

Horner, Ralph J.; and King, Dwight W. Guide for hand tools. 4,125,942, Cl. 33-76.00R.

Horster, Lothar, to Hartung, Kuhn & Co Maschinenfabrik GmbH. Lift-off device for oven chamber doors of a coke oven. 4,126,520, Cl. 202-248.000.

Hoshiya, Masaru: *See*—
Shimada, Yoshiharu; Suzuki, Manao; and Hoshiya, Masaru, 4,126,001, Cl. 405-287.000.

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Hounsfield, Godfrey N., to EMI Limited. Radiography. 4,126,785, Cl. 250-445.00T.

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House, Bruce F., to Shelley Manufacturing Company, Division of Alco Foodservice Equipment. Adjustable cup dispenser. 4,126,248, Cl. 221-241.000.

House, Carol: *See*—
House, James A.; and House, Carol, 4,126,671, Cl. 424-12.000.

House, James A.; and House, Carol, to Pitman-Moore, Inc. Method for detecting bovine leukemia viral infection. 4,126,671, Cl. 424-12.000.

House, Randolph D., to United Technologies Corporation. Optical system for laser doppler velocimeter and the like. 4,126,392, Cl. 356-28.500.

Houston, John M.; and Summerhayes, Harry R., to Electric Power Research Institute, Inc. Electronic current transducer for high voltage transmission lines. 4,126,825, Cl. 324-96.000.

Howard, Edward G., Jr., to Du Pont de Nemours, E. I., and Company. Ethylene polymer/acrylonitrile polymer composites. 4,126,647, Cl. 260-878.00R.

Hradil, Edward; Hradil, Hana; and Weisberg, Alfred M., to Technic, Inc. Silver complex, method of making said complex and method and electrolyte containing said complex for electroplating silver and silver alloys. 4,126,524, Cl. 204-44.000.

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Hradil, Edward; Hradil, Hana; and Weisberg, Alfred M., 4,126,524, Cl. 204-44.000.

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Huerth, Arthur W., to Chicago Etching Corporation. Snow removal device. 4,125,951, Cl. 37-53.000.

Hughes, William B.; and Zuech, Ernest A., to Phillips Petroleum Company. Metal complex. 4,126,577, Cl. 252-431.00N.

Hummel, Richard L. Solar energy collection system. 4,126,270, Cl. 237-1.00A.

Hundstad, Richard L.; and Weaver, Lelland A. C., to Westinghouse Electric Corp. High repetition rate metal halide laser. 4,126,833, Cl. 331-94.5PE.

Huntt, Robert L., to Trans-Tech, Inc. Process for assembling toroids from an intermediate product having a combustible interlayer. 4,126,723, Cl. 428-357.000.

Hyer, Frank S.; and Karosas, Raymond, to Hyer Industries, Inc. Conveyor belt system with positional transformation of weight data. 4,126,196, Cl. 177-121.000.

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Hyland, William C.; and Swanson, Elmer G., to Champion International Corporaton. Poultry container. 4,126,225, Cl. 206-607.000.

Ibamoto, Masahiko; Kuriyama, Shigeru; and Matsumoto, Genichi, to Hitachi, Ltd. Protective circuit for d.c. circuit. 4,126,889, Cl. 361-92.000.

Ichikawa, Hiroki; Miyazi, Kazumi; and Kusuyama, Michio, to Olympus Optical Co., Ltd. Magnetic tape drive device. 4,126,284, Cl. 242-201.000.

Ignashev, Evgeny P.; Konovalov, Evmeny G., deceased; Konovalov, Georgy E., administrator; and Zaitseva, Nina E., administrator. Apparatus for producing metal bands. 4,126,031, Cl. 72-285.000.

Ihasz, Richard; and Pires, Antonio, to Sperry Rand Corporation. Hair trimmer. 4,125,940, Cl. 30-220.000.

Ihde, Richard C.: *See*—
Thompson, Kenneth P.; Ihde, Richard C.; and Roth, Clarence E., 4,126,262, Cl. 229-17.00G.

Iimori, Nobuyuki; Koseki, Wasuke; and Ono, Atsuo, to Matsushita Electric Industrial Co., Ltd. Temperature responsive current interrupter. 4,126,845, Cl. 337-408.000.

Ikeda, Hiroshi; and Arai, Kenichi, to Minolta Camera Kabushiki Kaisha. Scanning type variable magnification electrophotographic copying machine employing copy paper storage roll. 4,126,389, Cl. 355-13.000.

Ikeda, Mitsuru; Ikeda, Teppei; Teramoto, Yoshihiko; Yasutake, Masatoshi; and Nakamine, Yoshimi, to Kabushiki Kaisha Daini Seikosha; and

Fuji Film Co., Ltd. Method and apparatus for determining photochemical reaction heat. 4,126,032, Cl. 73-15.00B.
Ikeda, Teppei: *See—*
Ikeda, Mitsuru; Ikeda, Teppei; Teramoto, Yoshihiko; Yasutake, Masatoshi; and Nakamine, Yoshimi, 4,126,032, Cl. 73-15.00B.
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Imamura, Hiroyuki: *See—*
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Imperial Chemical Industries Limited: *See—*
Boulton, Thomas W., 4,126,534, Cl. 204-266.000.
Collins, Bruce M., 4,126,645, Cl. 260-677.00A.
Cross, Graham W., 4,126,092, Cl. 102-24.0HC.
Hogan, Philip J.; and Jennings, James R., 4,126,632, Cl. 260-465.80D.
Shaw, Andrew, 4,126,685, Cl. 424-258.000.
Ina Seito Co., Ltd.: *See—*
Koyanagi, Takuji; and Ohno, Nobuhiro, 4,126,719, Cl. 428-35.000.
Inada, Masami; and Tamura, Toru. Ignition time adjuster for an internal combustion engine. 4,126,084, Cl. 91-443.000.
Incom International Inc.: *See—*
Langford, William D.; Leuenberger, Dale F.; and LeBlanc, John J., 4,126,054, Cl. 74-475.000.
Indak Manufacturing Corp.: *See—*
Raab, Andrew F., 4,126,153, Cl. 137-353.000.
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Colglazier, Donald F.; Fallon, John L.; Kollar, Ernest P.; and Mares, Fred R., 4,126,305, Cl. 271-120.000.
Haines, Robert S., 4,126,714, Cl. 427-127.000.
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International Standard Electric Corporation: *See—*
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Natalizia, Angelo, 4,126,295, Cl. 251-315.000.
Orthuber, Richard K., 4,126,813, Cl. 315-11.000.
Selvin, Gerald J., 4,126,840, Cl. 333-79.000.
Iogansen, Vadim I.; Kadi-Ogly, Ibragim A.; Petrov, Jury V.; Ptakul, Izrail A.; Chernyavsky, Vladimir P.; Shapiro, Aron B.; and Shkoda, Gennady V. Device for securing end connectors of electric machine stator winding. 4,126,799, Cl. 310-260.000.
Irwin, Malcolm P., to Techniservice Division, Textured Yarn Co. Inc. Jet tangler. 4,125,922, Cl. 28-221.000.
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Izumi, Koji. Mechanism for supplying golf balls to tees of a golf course. 4,126,313, Cl. 273-201.000.
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Jackman, Charles W. Friction transmission. 4,126,052, Cl. 74-200.000.
Jacob, Susan R.; and Brown, Patrick M., to Foote Mineral Company. Process for producing high purity lithium sulfide. 4,126,666, Cl. 423-561.00A.
Jacobson, Daniel H. Combination sleeping bag and hammock. 4,125,909, Cl. 5-121.000.
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Gommel, Karl-Werner; Michl, Uwe; and Radtke, Hans, 4,126,376, Cl. 350-90.000.
Jensen, James D.: *See—*
Schoolar, Richard B.; and Jensen, James D., 4,126,732, Cl. 428-539.000.
Jeske, Richard G., to Kearney & Trecker Corporation. Tool transfer mechanism for machine tools. 4,126,233, Cl. 214-1.0BB.
Jeumont-Schneider: *See—*
Chapront, Pierre A., 4,126,028, Cl. 72-19.000.
JO-Line Tools, Inc.: *See—*
Solomon, Donald F., 4,126,062, Cl. 81-52.40R.

Johansson, Anders, to Salen & Wicander Terminalsystem AB. Transport vehicle. 4,126,332, Cl. 280-683.000.
John Wyeth & Brother Limited: *See*—
White, Alan C.; and Sugden, Robert F., 4,126,683, Cl. 424-251.000.
Johns-Manville Corporation: *See*—
Hill, John A., 4,126,512, Cl. 162-171.000.
Johnson, Craig E.; and Dendor, Paul F., to United States of America, Navy. Double-base nitrocellulose propellant. 4,126,497, Cl. 149-100.000.
Johnson, Gordon E.: *See*—
Lindblad, Nero R.; Johnson, Gordon E.; and Sharp, James H., 4,126,455, Cl. 96-1.0SD.
Johnson, Herbert G.: *See*—
Hall, Charles M.; Johnson, Herbert G.; and Wright, John B., 4,126,617, Cl. 546-81.000.
Johnson & Johnson: *See*—
Gander, Robert J.; and Gurney, John A., 4,126,693, Cl. 424-282.000.
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Luceyk, Alfred R., 4,126,558, Cl. 210-429.000.
Johnson, Joseph D.; Viale, Hector E.; and Wait, Donald M., to Citrus Central, Inc. Method for extracting carotenoid pigments from citrus oils. 4,126,709, Cl. 426-540.000.
Johnson Products Co., Inc.: *See*—
Schroeder, George A., 4,126,143, Cl. 132-11.00A.
Johnson, William N. H. Means for and a method of cultivating plants. 4,125,963, Cl. 47-27.000.
Johnston, James P., to Procter & Gamble Company, The. Peroxyacid bleach compositions having increased solubility. 4,126,573, Cl. 252-99.000.
Jonas, Gerald L. Building panel construction and connector therefor. 4,125,984, Cl. 52-809.000.
Jones, Harry S. Snapshot type three dimensional camera. 4,126,876, Cl. 354-112.000.
Jones, Lewis O., to Xerox Corporation. Imaging process utilizing classified high surface area carrier materials. 4,126,454, Cl. 96-15.00D.
Jones, Thomas I.; Graham, Geoffrey; and Finan, Michael A., to Ciba-Geigy (UK) Limited. Treatment of water. 4,126,549, Cl. 210-58.000.
Jost, Max, to Ciba-Geigy Corporation. 1-Nitroarylamino-5 or 8-phenoxy or phenylmercapto anthraquinone. 4,126,626, Cl. 260-378.000.
Jowers, Leonard J.; Kennemer, James C.; Long, William J.; Long, Charles A., Jr.; and Babanats, Robert L., to Amer-o-Matic Corporation. Remittance processor. 4,126,779, Cl. 235-432.000.
Judd, Myles A.: *See*—
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,126,898, Cl. 364-900.000.
Juhlin, Lars-Erik: *See*—
Ekstrom, Ake; Eriksson, Kjell; and Juhlin, Lars-Erik, 4,126,892, Cl. 363-35.000.
Jung, Hans-Ulrich: *See*—
Junginger, Klaus M.; and Jung, Hans-Ulrich, 4,125,907, Cl. 5-81.00B.
Junginger, Klaus M.; and Jung, Hans-Ulrich, to Stierlen-Maquet AG. Transfer apparatus for the transfer of recumbent patients, particularly in hospitals. 4,125,907, Cl. 5-81.00B.
Justus, Edgar J.; and Dahl, Carl B., to Beloit Corporation. Air dome attenuator. 4,126,513, Cl. 162-380.000.
Kabushiki Kaisha Akashi Seisakusho: *See*—
Shimonaka, Tomoo, 4,126,069, Cl. 83-703.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Ikeda, Mitsuru; Ikeda, Teppei; Teramoto, Yoshihiko; Yasutake, Masatoshi; and Nakamine, Yoshimi, 4,126,032, Cl. 73-15.00B.
Ito, Teruo, 4,126,796, Cl. 310-40.0MM.
Nakagawa, Yasuichi; Ikenishi, Masataka; Kushida, Shozo; and Tsukutani, Hirokazu, 4,125,994, Cl. 58-59.000.
Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Kamata, Kazuo; and Yamamoto, Yasushi, 4,126,071, Cl. 84-1.030.
Kadi-Ogly, Ibragim A.: *See*—
Iogansen, Vadim I.; Kadi-Ogly, Ibragim A.; Petrov, Jury V.; Ptakul, Izrail A.; Chernyavsky, Vladimir P.; Shapiro, Aron B.; and Shkoda, Gennady V., 4,126,799, Cl. 310-260.000.
Kah, Carl L. C., Jr., to United Technologies Corporation. Laser nozzle and optical cavity wall construction. 4,126,271, Cl. 239-397.500.
Kaiser Aluminum & Chemical Corporation: *See*—
Bowman, Jan, 4,126,478, Cl. 106-58.000.
Sobolev, Igor; and Panusch, Erwin, 4,126,473, Cl. 106-15.0FP.
Videtto, Ralph B., 4,126,479, Cl. 106-62.000.
Kallmann, Jurgen, to Palitex Project Company GmbH. Two for one twister having freely rotatable guide plate. 4,125,992, Cl. 57-58.830.
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Kamath, Venkatesh: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,569, Cl. 252-89.00R.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,570, Cl. 252-89.00R.
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Kameyama, Tsutomu: *See*—
Yoshina, Shigetaka, deceased; Yoshina, Teruko, legal heir; Kameyama, Tsutomu; Oiji, Yoshimasa; and Kiyohara, Akira, 4,126,625, Cl. 260-346.220.
Kaminski, Stanley J., to Congoleum Corporation. Resinous polymer sheet materials having selective, decorative effects. 4,126,727, Cl. 428-172.000.
Kamp, Heinz: *See*—
Stahlecker, Fritz; Kamp, Heinz; and Raasch, Hans, 4,125,990, Cl. 57-263.000.
Kaneda, Aizo: *See*—
Saeki, Jun-Ichi; Kaneda, Aizo; and Otsuki, Keizo, 4,126,292, Cl. 249-110.000.
Kaneko, Masakatsu: *See*—
Nakao, Hideo; Yanagisawa, Hiroaki; Shimizu, Bunji; Kaneko, Masakatsu; Nagano, Mitsuo; and Sugawara, Shinichi, 4,126,745, Cl. 544-21.000.
Kapetanakos, Christos A.; and Golden, Jeffry, to United States of America, Navy. Intense ion beam producing reflex triode. 4,126,806, Cl. 313-155.000.
Karlsson, Per-Olle, to Granges Oxelosund Jarnverk AB. Method and apparatus for producing metal blanks, in particular steel slabs, which at least in a predetermined surface area have substantially no defects. 4,126,491, Cl. 148-9.500.
Karosas, Raymond: *See*—
Hyer, Frank S.; and Karosas, Raymond, 4,126,196, Cl. 177-121.000.
Karp, Joel A.: *See*—
Baldwin, Steven M.; Henderson, Donald L., Sr.; and Karp, Joel A., 4,125,933, Cl. 29-571.000.
Kasai, Masao: *See*—
Misumi, Teruyuki; Miyaji, Toshio; and Kasai, Masao, 4,126,548, Cl. 210-33.000.
Kashio, Toshio, to Casio Computer Co., Ltd. Electronic timepiece. 4,125,995, Cl. 58-855.000.
Katabuchi, Keichi; Kawana, Fujio; and Arai, Hajime. Combustion device for burning waste gases containing combustible and noxious matters. 4,126,419, Cl. 422-109.000.
Kaufman, Marvin L., to Mobil Oil Corporation. Radiation curable coatings containing hydroxy functional polyethers and polyesters of monoethylenic acids or hydroxy esters thereof. 4,126,527, Cl. 204-159.220.
Kaufmann, Meinolph: *See*—
Doriguzzi, Rino; Egloff, Markus; Kaufmann, Meinolph; and Scheffer, Terry J., 4,126,383, Cl. 350-338.000.
Kawachi, Kazuo. Magnetic tape cassette. 4,126,283, Cl. 242-199.000.
Kawaharazaki, Takashi: *See*—
Morita, Masayuki; Kawaharazaki, Takashi; and Shimogawa, Toshiaki, 4,126,282, Cl. 242-107.000.
Kawai, Yoshihisa, to Minolta Camera Kabushiki Kaisha. Electrophotocopying machine of electrostatic latent image transfer type. 4,126,388, Cl. 355-1.000.
Kawana, Fujio: *See*—
Katabuchi, Keichi; Kawana, Fujio; and Arai, Hajime, 4,126,419, Cl. 422-109.000.
Kawasaki, Masahiro: *See*—
Urano, Fumio; and Kawasaki, Masahiro, 4,126,873, Cl. 354-51.000.
Kay, Christopher G.; and Fritsch, Robert A., to Harnischfeger Corporation. Control system for telescopic boom. 4,125,974, Cl. 52-115.000.
Kay, Thomas. Solar collector panel and refrigeration system operated thereby. 4,126,014, Cl. 62-2.000.
Kayano, Hideo: *See*—
Yajima, Seishi; Kayano, Hideo; and Toma, Hideo, 4,126,242, Cl. 220-83.000.
Kearney & Trecker Corporation: *See*—
Jeske, Richard G., 4,126,233, Cl. 214-1.0BB.
Kielma, Ervin J.; and Schabowski, Albin J., 4,125,932, Cl. 29-568.000.
Stobbe, Richard E.; and Cesarz, Michael R., 4,126,819, Cl. 318-810.000.
Keating, John T.: *See*—
Walrath, George A.; and Keating, John T., 4,126,597, Cl. 260-33.20R.
Kechely, Raymond O. Weighing ramp adaptor. 4,126,197, Cl. 177-145.000.
Keddy, James R.: *See*—
Cronshaw, David; Keddy, James R.; Shemer, Jack E.; and Turner, William D., 4,126,894, Cl. 364-200.000.
Keeler, Robert A.: *See*—
Tyson, George F.; Keeler, Robert A.; and Myers, Raymond L., 4,126,230, Cl. 211-50.000.
Keiichi, Hara. Electrostatic dust precipitators. 4,126,434, Cl. 55-137.000.

Keller, Kenneth D.: *See*—
Gray, Robert L.; and Keller, Kenneth D., 4,126,856, Cl. 340-529.000.

Keller, Wolfgang; Kramer, Herbert; and Reuschel, Konrad, to Siemens Aktiengesellschaft. Process for producing phosophorous-doped silicon monocrystals having a select peripheral dopant concentration along a radial cross-section of such monocrystal. 4,126,509, Cl. 156-605.000.

Kelly, Michael G.: *See*—
Swanson, Clare E.; and Kelly, Michael G., 4,126,556, Cl. 210-242.0AS.

Kelly, Orson K.: *See*—
Brown, William J.; and Kelly, Orson K., 4,126,056, Cl. 74-491.000.

Kelm, Everett F., to Corning Glass Works. Multiple fluid flow path bodies. 4,126,178, Cl. 165-165.000.

Kennard, Harry M.: *See*—
Marcus, James T.; and Kennard, Harry M., 4,126,560, Cl. 210-489.000.

Kennedy, Frank: *See*—
Goetze, Edward S.; and Kennedy, Frank, 4,125,924, Cl. 29-148.40D.

Kennedy, James A.: *See*—
Downey, David L.; Kennedy, James A.; and Neely, Liston E., 4,126,764, Cl. 179-15.0BA.

Kennemer, James C.: *See*—
Jowers, Leonard J.; Kennemer, James C.; Long, William J.; Long, Charles A., Jr.; and Babanats, Robert L., 4,126,779, Cl. 235-432.000.

Kennis, Ludo E. J.: *See*—
Vandenberk, Jan; Kennis, Ludo E. J.; Van der Aa, Marcel J. M. C.; and Van Heertum, Albert H. M. Th., 4,126,687, Cl. 424-267.000.
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Keough, Laurence J.; and Butts, Bruce D., to Texas Instruments Incorporated. Keyboard apparatus and method of making. 4,125,934, Cl. 29-622.000.

Keresztes nee Ordog, Borbala: *See*—
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog, Borbala; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,126,622, Cl. 260-340.300.

Kessler, Sebastian W., Jr.; and Olmstead, John A., to RCA Corporation. Semiconductor device with ballast resistor adapted for a transcalent device. 4,126,879, Cl. 357-82.000.

Kesterson, Albert O.: *See*—
Lancia, Frederick N.; and Kesterson, Albert O., 4,126,857, Cl. 340-620.000.

Khrusch, Petr R.: *See*—
Genrikh, Georgy A.; Nikonets, Leonid A.; Khrusch, Petr R.; Oleinik, Vladimir P.; and Neiman, Alexandr A., 4,126,792, Cl. 307-112.000.

Kielma, Ervin J.; and Schabowski, Albin J., to Kearney & Trecker Corporation. Multiple spindle machine tool. 4,125,932, Cl. 29-568.000.

Kikuchi, Shoji: *See*—
Endo, Takaya; Sato, Shui; Kikuchi, Shoji; Kozima, Tamotsu; Usui, Tugumoto; Imamura, Hiroyuki; and Takabe, Koichi, 4,126,462, Cl. 96-56.500.

Killian, Henry E., to Whale Enterprises, Inc. Dip net for fish and the like. 4,125,956, Cl. 43-11.000.

Kim, Leo; and Wald, Milton M., to Shell Oil Company. Conversion of butadiene (1,3) and methanol. 4,126,642, Cl. 260-673.000.

Kim, Vladimir A.; Samokhvalov, Jury I.; Petrov, Boris M.; Golovkin, Engels K.; and Artamonova, Galina N. Tire-building drum. 4,126,507, Cl. 156-415.000.

Kimura, Mitsuhiro: *See*—
Nishizawa, Jun-ichi; and Kimura, Mitsuhiro, 4,126,731, Cl. 428-446.000.

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Thil, Lucien; Fischer, Martin; and Kindscher, Wolfgang, 4,126,634, Cl. 562-507.000.

King, Dwight W.: *See*—
Horner, Ralph J.; and King, Dwight W., 4,125,942, Cl. 33-76.00R.

King, James R.: *See*—
Pupo, David A.; Ciurca, Samuel J., Jr.; Haist, Grant M.; and King, James R., 4,126,461, Cl. 96-50.00R.

King, Joseph S.; and Huber, Robert L., to McGraw-Edison Company. Tool for removing insulating material from electrical conductors. 4,125,916, Cl. 15-23.000.

Kirk, David B., to Moore Products Co. Pressure reproducing relay. 4,126,152, Cl. 137-85.000.

Kirkland, Kerry G.: *See*—
Ortloff, John E.; Masciopinto, Anthony J.; and Kirkland, Kerry G., 4,126,336, Cl. 285-136.000.

Kirner, Wilhelm, to Siemens Aktiengesellschaft. Air venting device for ink supply systems of ink mosaic printers. 4,126,868, Cl. 346-140.00R.

Kiss, Laszlo J. Positive one-way clutch system. 4,126,214, Cl. 192-36.000.

Kitamura, Tomosaburo: *See*—
Yamanoi, Hiroshi; and Kitamura, Tomosaburo, 4,126,839, Cl. 333-72.000.

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Tamura, Junzo; and Kitayama, Seishi, 4,126,770, Cl. 179-170.200.

Kitteridge, John M.; and Armstrong, Robert J., to Vickers Limited. Radiation sensitive compositions of quaternary ammonium salt and carboxylic acid sensitizer. 4,126,468, Cl. 96-88.000.

Kiwala, Jacob: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,126,140, Cl. 131-8.00R.
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Kiwi Coders Corporation: *See*—
McKay, James G., 4,126,090, Cl. 101-348.000.

Kiyohara, Akira: *See*—
Yoshina, Shigetaka, deceased; Yoshina, Teruko, legal heir; Kameyama, Tsutomu; Oiji, Yoshimasa; and Kiyohara, Akira, 4,126,625, Cl. 260-346.220.

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Manfroy, Willy; and Klimpel, Richard R., 4,126,276, Cl. 241-16.000.
Manfroy, Willy; and Klimpel, Richard R., 4,126,277, Cl. 241-16.000.
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Kling, Alberto. Electromagnetic driving device. 4,126,797, Cl. 310-46.000.

Klippan GmbH Hamburg: *See*—
Weman, Per O., 4,126,325, Cl. 280-738.000.

Klitz, Ronald J., to J. I. Case Company. Travel-brake control system. 4,126,082, Cl. 91-41.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Herchenbach, Horst; Ramesohl, Hubert; Kuhs, Rudolf; and Schneider, Kurt, 4,126,471, Cl. 106-100.000.

Klosk, Lawrence. Rubbish receptacle. 4,126,241, Cl. 220-1.00T.

Klotz, Robert J.; and Stephen, Donald W., to Combustion Engineering, Inc. Nuclear reactor cavity streaming shield. 4,126,515, Cl. 176-87.000.

Knutson, J. Eugene Harold: *See*—
Schiffmacher, William M.; and Knutson, J. Eugene Harold, 4,126,715, Cl. 427-141.000.

Kobayashi, Toshihiko: *See*—
Imamura, Nobutake; Mimura, Yoshinori; and Kobayashi, Toshihiko, 4,126,494, Cl. 148-31.570.

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Imamura, Nobutake; Mimura, Yoshinori; and Kobayashi, Toshihiko, 4,126,494, Cl. 148-31.570.
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Kolenik, Steve A.: *See*—
Walters, Robert A.; and Kolenik, Steve A., 4,126,139, Cl. 128-419.0PG.

Kollar, Ernest P.: *See*—
Colglazier, Donald F.; Fallon, John L.; Kollar, Ernest P.; and Mares, Fred R., 4,126,305, Cl. 271-120.000.

Kolwaite, John S., to General Electric Company. Two piece portable radio cabinet hinged about antenna. 4,126,863, Cl. 343-702.000.

Komyak, Nikolai I.: *See*—
Bello, Mark B.; Gittemeier, Jury P.; Komyak, Nikolai I.; Levitin, Anatoly I.; Stolin, Valery I.; Frumkin, Semen P.; Vijunnik, Viktor S.; Leites, Anatoly B.; Lyakhov, Jury V.; Novikov, Vladlen V.; Patsiansky, Felix A.; Semyanov, Alexandr I.; and Yaroshevich, Nikolai M., 4,126,226, Cl. 209-589.000.

Kondo, Toshihiro, to Fuji Photo Film Co., Ltd. Automatic focusing device. 4,126,870, Cl. 354-25.000.

Kongsgaarden, Ole A., to Elkem-Spigerverket A/S. Method of increasing the bulk density of silica dust. 4,126,423, Cl. 23-293.00R.

Kongsgaarden, Ole A., to Elkem-Spigerverket A/S. Method of compacting silica dust. 4,126,424, Cl. 23-293.00R.

Konishiroku Photo Industry Co., Ltd.: *See*—
Endo, Takaya; Sato, Shui; Kikuchi, Shoji; Kozima, Tamotsu; Usui, Tugumoto; Imamura, Hiroyuki; and Takabe, Koichi, 4,126,462, Cl. 96-56.500.

Konovalov, Evmeny G., deceased: *See*—
Ignashev, Evgeny P.; Konovalov, Evmeny G., deceased; Konovalov, Georgy E., administrator; and Zaitseva, Nina E., administrator, 4,126,031, Cl. 72-285.000.

Konovalov, Georgy E., administrator: *See*—
Ignashev, Evgeny P.; Konovalov, Evmeny G., deceased; Konovalov, Georgy E., administrator; and Zaitseva, Nina E., administrator, 4,126,031, Cl. 72-285.000.

Koomen, Joannes J. M.; Lohstroh, Jan; Salters, Roelof H. W.; and Van Zanten, Adrianus T., to U.S. Philips Corporation. Random access junction field-effect floating gate transistor memory. 4,126,900, Cl. 365-185.000.

Koomen, Joannes J. M.: *See*—
Lohstroh, Jan; Koomen, Joannes J. M.; Salters, Roelof H. W.; and Hart, Cornelis M., 4,126,899, Cl. 365-182.000.

Koontz, Paul G.; Wright, Richard L.; and Cantu, Arthur M., to Hipoint Research, Inc. Photoreceptor plate cassette for use in automated X-ray image processing systems. 4,126,788, Cl. 250-481.000.

Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, to Ovutime, Inc. Eccentric viscometer for testing biological and other fluids. 4,126,035, Cl. 73-60.000.

Kopp, Karl D.: *See*—
Forssberg, Knut S. E.; and Kopp, Karl D., 4,126,433, Cl. 55-74.000.

Koppelman, Edward: *See*—
Murray, Robert G., 4,126,519, Cl. 201-32.000.

Koryagin, Alexandr A.: *See*—
Mamistov, Vasily V.; Koryagin, Alexandr A.; Burov, Vladimir P.; Denisov, Vladimir F.; and Balashov, Vasily T., 4,125,947, Cl. 34-108.000.

Kosasky, Harold: *See*—
Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, 4,126,035, Cl. 73-60.000.
Koseki, Wasuke: *See*—
Iimori, Nobuyuki; Koseki, Wasuke; and Ono, Atsuo, 4,126,845, Cl. 337-408.000.
Kovacs, Gabor: *See*—
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog, Borbala; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,126,622, Cl. 260-340.300.
Koyamada, Yahei; and Ishihara, Fujio, to Nippon Telegraph and Telephone Public Corporation. Impedance element and band-rejection filter using the same. 4,126,837, Cl. 333-72.000.
Koyanagi, Takuji; and Ohno, Nobuhiro, to Ina Seito Co., Ltd. Reinforced plastic products with decorated surfaces. 4,126,719, Cl. 428-35.000.
Koyo Seiko Company Limited: *See*—
Okuda, Hiroji, 4,126,018, Cl. 64-23.000.
Kozima, Tamotsu: *See*—
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Kraftwerk Union Aktiengesellschaft: *See*—
Schmoch, Otto, 4,125,996, Cl. 60-39.09R.
Kramer, Francis J.: *See*—
Martin, Charles R.; Kramer, Francis J.; and Warman, Thomas E., 4,126,258, Cl. 227-8.000.
Kramer, Herbert: *See*—
Keller, Wolfgang; Kramer, Herbert; and Reuschel, Konrad, 4,126,509, Cl. 156-605.000.
Krammer, Franz: *See*—
Peters, Victor; and Krammer, Franz, 4,126,594, Cl. 260-29.4UA.
Krasnow, Leonard L., to Elkay Products, Inc. Cuvette. 4,126,418, Cl. 422-64.000.
Kratz, Kenneth S.: *See*—
Smith, Andrew W., Jr.; and Kratz, Kenneth S., 4,126,027, Cl. 72-11.000.
Krautz, Fred G.: *See*—
Richardson, Tom A.; Haggerty, William N.; and Krautz, Fred G., 4,126,729, Cl. 428-389.000.
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Krespan, Carl G.; and Smart, Bruce E., to Du Pont de Nemours, E. I., and Company. β-Carbonylpolyfluoroalkyl sulfonate esters. 4,126,631, Cl. 260-456.00F.
Kreuzer, John A.; and Gothard, John F., Jr., to Brunswick Corporation. Radio-controlled surface target having a pliable cover. 4,126,312, Cl. 273-105.200.
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Sarro, Manuel B.; and Kriefeldt, Richard D., 4,126,113, Cl. 123-179.00F.
Krone, Bernard; and Ahler, Wilhelm, to Maschinenfabriken Bernard Krone GmbH. Row crop harvester. 4,125,987, Cl. 56-13.300.
Kronstein, Max; and Eichberg, Joseph, to American Lecithin Company. Direct surface modification of pigments by plant phosphatides for their suspension in coating compounds. 4,126,591, Cl. 260-22.00A.
Krorre, Helmut; and Leidl, Peter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Packages for the storage of air and moisture sensitive metallurgical additives and the use of such packages. 4,126,446, Cl. 75-53.000.
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Bartoli, Filbert J.; Esterowitz, Leon; Allen, Roger E.; and Kruer, Melvin R., 4,126,033, Cl. 73-15.00A.
Krumme, John F., to Raychem Corporation. Method for sealing integrated circuit components with heat recoverable cap and resulting package. 4,126,758, Cl. 174-52.0FP.
Krygowski, Matthew A.: *See*—
Capowski, Robert S.; Krygowski, Matthew A.; and Zimmerman, Terrence K., 4,126,897, Cl. 364-200.000.
Kubota, Ltd.: *See*—
Nagao, Shozo; O'Hashi, Yoshinobu; and Watanabe, Yuichi, 4,126,337, Cl. 285-231.000.
Kudo, Mituo: *See*—
Fujie, Kunio; Otsuka, Yoshinori; Kunugi, Yoshifumi; and Kudo, Mituo, 4,126,015, Cl. 62-284.000.
Kuhla, Donald E.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,126,624, Cl. 260-345.90R.
Kuhs, Rudolf: *See*—
Herchenbach, Horst; Ramesohl, Hubert; Kuhs, Rudolf; and Schneider, Kurt, 4,126,471, Cl. 106-100.000.
Kumagai, Morio, to Trio Kabushiki Kaisha. Intermodulation antiinterference device for superheterodyne receiver. 4,126,828, Cl. 325-472.000.
Kunst, Helmut; and Scondo, Christian, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Boriding agent for boriding mass produced parts of ferrous and non-ferrous metals. 4,126,488, Cl. 148-6.000.
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Fujie, Kunio; Otsuka, Yoshinori; Kunugi, Yoshifumi; and Kudo, Mituo, 4,126,015, Cl. 62-284.000.
Kuraray Co., Ltd.: *See*—
Otera, Junzo; Makimoto, Tsutomu; Shinoda, Wataru; and Hattori, Norihisa, 4,126,567, Cl. 252-62.540.
Kuris, Arthur. Ultrasonic oil spill removal. 4,126,547, Cl. 210-19.000.
Kuriyama, Shigeru: *See*—
Ibamoto, Masahiko; Kuriyama, Shigeru; and Matsumoto, Genichi, 4,126,889, Cl. 361-92.000.
Kurosaki, Makoto, to Nippon Gakki Seizo Kabushiki Kaisha. Supporting device for drums and like musical instruments on a stand. 4,126,075, Cl. 84-421.000.
Kusakabe, Takaaki: *See*—
Shiokawa, Showko; Kusakabe, Takaaki; Moriizumi, Toyosaka; and Yasuda, Tsutomu, 4,126,800, Cl. 310-313.000.
Kushida, Shozo: *See*—
Nakagawa, Yasuichi; Ikenishi, Masataka; Kushida, Shozo; and Tsukutani, Hirokazu, 4,125,994, Cl. 58-59.000.
Kusuyama, Michio: *See*—
Ichikawa, Hiroki; Miyazi, Kazumi; and Kusuyama, Michio, 4,126,284, Cl. 242-201.000.
Kvita, Vratislav: *See*—
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,126,619, Cl. 260-326.00C.
Kwik-Way Manufacturing Company: *See*—
Wagor, John C.; and Bradley, Robert W., 4,126,066, Cl. 82-4.00A.
Kwon, Joon T.; and Gelbein, Abraham P., to Lummus Company, The. Cyclic process for production of alkylene oxide using electrolysis of brine. 4,126,526, Cl. 204-98.000.
Kyokado Engineering Co., Ltd.: *See*—
Shimada, Yoshiharu; Suzuki, Manao; and Hoshiya, Masaru, 4,126,001, Cl. 405-287.000.
Kyowa Hakko Kogyo Kabushiki Kaisha: *See*—
Tamaki, Kentaro; Naito, Naoki; Nishimura, Fumio; Fujii, Kyoichi; and Nakamura, Nobuo, 4,126,686, Cl. 424-267.000.
Yoshina, Shigetaka, deceased; Yoshina, Teruko, legal heir; Kameyama, Tsutomu; Oiji, Yoshimasa; and Kiyohara, Akira, 4,126,625, Cl. 260-346.220.
L.B. Foster Company: *See*—
Mars, Bernard S., 4,126,007, Cl. 405-271.000.
L. Payen & Cie: *See*—
Payen, Pierre, 4,126,499, Cl. 156-148.000.
Laauwe, Robert H.; and Roggenburg, Stanley L., Jr. Moisture-proof and child-resistant pill box. 4,126,224, Cl. 206-540.000.
Lahr, Roy J.: *See*—
Thornburg, David D.; and Lahr, Roy J., 4,126,824, Cl. 324-62.000.
Laine, Patrick: *See*—
Monzie, Pierre; Chaunis, Serge; Goullioud, Pierre; and Laine, Patrick, 4,126,656, Cl. 264-83.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Bytniewski, Joseph; Chovet, Patrice; Gabillard, Jean-Pierre; and Prost, Roger, 4,126,017, Cl. 62-514.0JT.
Lampe, Wolfgang, to Asea AB. Attachment of insulating collars. 4,126,843, Cl. 336-84.00C.
Lamy, Jacques E.; Michel, Dominique; and Serrano, Francisco de Assis M., to Compagnie Generale pour les Developpements Operationnels des Richesses sous-Marines "C.G. Doris". Method of fabrication of offshore structures and offshore structures made according to the method. 4,126,011, Cl. 405-196.000.
Lancia, Frederick N.; and Kesterson, Albert O., to Liebert Corporation. Probe-type liquid detector. 4,126,857, Cl. 340-620.000.
Lange, Kenneth W., to Chicago Bridge & Iron Company. Ship with flat bottom tank and shrink-fit system for lateral support. 4,126,099, Cl. 114-74.00A.
Langford, William D.; Leuenberger, Dale F.; and LeBlanc, John J., to Incom International Inc. Control means. 4,126,054, Cl. 74-475.000.
Lanza, Richard C.; and Sohval, A. Robert, to Butler-Newton, Inc. Radiation imaging system. 4,126,783, Cl. 250-336.000.
Laputte, Robert: *See*—
Agouri, Elias; Laputte, Robert; and Rideau, Jacques, 4,126,648, Cl. 260-878.00R.
Larsson, Hans F.: *See*—
Hjelmner, Ulf R.; and Larsson, Hans F., 4,126,546, Cl. 210-19.000.
Laske, Louis L., to Vonco Products, Inc. Process for forming peelable seals. 4,125,985, Cl. 53-452.000.
Lathrop, Michael A.; and Mantyla, Robert D., to Ball Corporation. Continuously castable zinc base alloy. 4,126,450, Cl. 75-178.0AM.
Lauber, Leo E.: *See*—
Cowden, Ernest A.; and Lauber, Leo E., 4,126,130, Cl. 128-91.00R.
Lauder, Alan, to Du Pont de Nemours, E. I., and Company. Stable perovskite catalysts. 4,126,580, Cl. 252-462.000.
Laupman, Robert R., to Novanex Automation N.V. Electronic echo apparatus. 4,126,829, Cl. 330-110.000.
Leach, Bruce E., to Continental Oil Company. Phenolics methylation using a modified alumina catalyst. 4,126,749, Cl. 568-804.000.
LeBlanc, John J.: *See*—
Langford, William D.; Leuenberger, Dale F.; and LeBlanc, John J., 4,126,054, Cl. 74-475.000.
Leclercq, Jean-Pierre C. I. M.: *See*—
Goffinet, Pierre C. E.; and Leclercq, Jean-Pierre C. I. M., 4,126,562, Cl. 252-8.800.
Lee, David Q.: *See*—
Calder, John A.; Rovnyak, Richard M.; and Lee, David Q., 4,126,765, Cl. 179-18.0AH.
Lee, George A., to Melville-Smith, Ronald. Vibrator. 4,126,050, Cl. 74-26.000.
Lehigh Press Inc.: *See*—
Dickinson, Robert H., 4,126,333, Cl. 281-3.00R.
Leidl, Peter: *See*—
Krorre, Helmut; and Leidl, Peter, 4,126,446, Cl. 75-53.000.

Leites, Anatoly B.: *See—*
Bello, Mark B.; Gittemeier, Jury P.; Komyak, Nikolai I.; Levitin, Anatoly I.; Stolin, Valery I.; Frumkin, Semen P.; Vijunnik, Viktor S.; Leites, Anatoly B.; Lyakhov, Jury V.; Novikov, Vladlen V.; Patsiansky, Felix A.; Semyanov, Alexandr I.; and Yaroshevich, Nikolai M., 4,126,226, Cl. 209-589.000.

LeMay, Christopher Archibald G.; and Blay, Alan G., to EMI Limited. Radiography. 4,126,786, Cl. 250-445.00T.

Lempkowicz, Axel; Nanoux, Jean; and Bequet, Jean-Francois, to Solvay & Cie. Process for the manufacture of oriented sheets of thermoplastic resin which are protected against the action of ultraviolet rays. 4,126,660, Cl. 264-101.000.

Lendrihas, George, to Realsources, Inc. Form assembly for building framework. 4,125,973, Cl. 52-91.000.

Lenhard, Myron J.; and Rees, James D., to Xerox Corporation. Toners for color flash fusers containing a permanent colorant and a heat sensitive dye. 4,126,565, Cl. 252-62.10P.

Leon, Renato S. Record filing system. 4,126,227, Cl. 209-611.000.

LePore, Paul E.: *See—*
Mente, Alfred C.; and LePore, Paul E., 4,126,849, Cl. 340-19.00R.

Leppmeier, Franz: *See—*
Fischer, Karl; Horn, Peter; Eckert, Guenter; and Leppmeier, Franz, 4,126,414, Cl. 8-94.210.

Lestraden, Jacobus J. W. Compartmentalization in a treatment room. 4,125,949, Cl. 34-231.000.

Leuenberger, Dale F.: *See—*
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Lever Brothers Company: *See—*
Curtis, Michael; Davies, Richard L.; and Galvin, John S., 4,126,586, Cl. 252-524.000.
Mazzola, Louis R., 4,126,717, Cl. 427-220.000.
Tai, Ho Tan, 4,126,572, Cl. 252-89.00R.
Wood, George D., 4,126,249, Cl. 222-92.000.

Levine, Shirley. Shoulder strap pad. 4,125,904, Cl. 2-267.000.

Levitin, Anatoly I.: *See—*
Bello, Mark B.; Gittemeier, Jury P.; Komyak, Nikolai I.; Levitin, Anatoly I.; Stolin, Valery I.; Frumkin, Semen P.; Vijunnik, Viktor S.; Leites, Anatoly B.; Lyakhov, Jury V.; Novikov, Vladlen V.; Patsiansky, Felix A.; Semyanov, Alexandr I.; and Yaroshevich, Nikolai M., 4,126,226, Cl. 209-589.000.

Lewis, Lawrence J. Multipurpose tube wrench. 4,125,913, Cl. 7-138.000.

Lewis, Mack A., to Persinger, C. Wilson. Boat dock assembly. 4,126,006, Cl. 405-220.000.

Liberti, Frank N.: *See—*
Borman, Willem F. H.; and Liberti, Frank N., 4,126,592, Cl. 260-22.00M.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Bader, Dietrich; Berger, Engelbert; Ohnemuller, Dieter; and Reiprich, Sieghard, 4,126,803, Cl. 313-55.000.

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Lancia, Frederick N.; and Kesterson, Albert O., 4,126,857, Cl. 340-620.000.

Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., to International Flavors & Fragrances Inc. Smoking tobacco and smoking tobacco flavoring compositions containing hydroxy cyclohexenone derivatives. 4,126,140, Cl. 131-8.00R.

Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Process of enhancing the aroma of a soap with liquid detergent norbornane derivatives. 4,126,569, Cl. 252-89.00R.

Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Process of enhancing the aroma of a detergent with norbornane derivatives. 4,126,570, Cl. 252-89.00R.

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Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; and Shuster, Edward J., to International Flavors & Fragrances Inc. Process for preparing 2-butyl-3,5,5-trimethyl-2-cyclohexen-1,4-dione. 4,126,641, Cl. 260-586.00C.

Lilliston Corporation: *See—*
Wylie, M. Lynn, 4,126,190, Cl. 172-624.000.

Lindberg, Bernt J.: *See—*
Rothman, Ulf S. E.; and Lindberg, Bernt J., 4,126,669, Cl. 424-1.000.

Lindblad, Nero R.; Johnson, Gordon E.; and Sharp, James H., to Xerox Corporation. Electrostatographic imaging process and related apparatus. 4,126,455, Cl. 96-1.0SD.

Lindeboom, Herman, to Ingersoll-Rand Company. Friction rock stabilizer. 4,126,004, Cl. 405-259.000.

Lindner, Heinz; Georgi, Wolfgang; Muller, Lisbet; Stopp, Fritz; and Oehm, Werner, to VEB Wirkmaschienbau. Patterning apparatus for pile knitting machines, particularly for producing jacquard patterned knitted pile fabrics on crocheting galloon machines. 4,126,019, Cl. 66-84.00R.

List, Frederick B. Handling device for soft contact lenses. 4,126,345, Cl. 294-1.0CA.

List, Hans; Greier, Josef; Obermayer, Bertram; Fachbach, Heinz; and Skatsche, Othmar, to List, Hans. Internal combustion engine. 4,126,115, Cl. 123-198.00E.

Liu, Sophia Y.: *See—*
Via, Francis A.; and Liu, Sophia Y., 4,126,650, Cl. 260-980.000.

Locker, Daniel: *See—*
Miller, Morris L.; and Locker, Daniel, 4,126,200, Cl. 180-66.00R.

Lockheed Aircraft Corporation: *See—*
Blad, Leiv H., 4,126,659, Cl. 264-90.000.

Lohstroh, Jan; Koomen, Joannes J. M.; Salters, Roelof H. W.; and Hart, Cornelis M., to U.S. Philips Corporation. Junction field effect transistor random access memory. 4,126,899, Cl. 365-182.000.

Lohstroh, Jan: *See—*
Koomen, Joannes J. M.; Lohstroh, Jan; Salters, Roelof H. W.; and Van Zanten, Adrianus T., 4,126,900, Cl. 365-185.000.

Long, Charles A., Jr.: *See—*
Jowers, Leonard J.; Kennemer, James C.; Long, William J.; Long, Charles A., Jr.; and Babanats, Robert L., 4,126,779, Cl. 235-432.000.

Long, Olen R., to Otis Engineering Corporation. Locating system. 4,126,179, Cl. 166-64.000.

Long, William J.: *See—*
Jowers, Leonard J.; Kennemer, James C.; Long, William J.; Long, Charles A., Jr.; and Babanats, Robert L., 4,126,779, Cl. 235-432.000.

Longhurst, David W.; and Weston, Martin A., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Satellite tracking dish antenna. 4,126,865, Cl. 343-766.000.

Longoni, Angelo: *See—*
Piccardi, Paolo; Massardo, Pietro; and Longoni, Angelo, 4,126,623, Cl. 260-340.50R.

Longuepee, Michel; and Dreulle, Noel, to International Lead Zinc Research Organization, Inc. Solution and procedure for depositing a protective precoating on surfaces of zinc-coated ferrous metal parts against corrosion in presence of water. 4,126,469, Cl. 106-14.120.

L'Oreal: *See—*
Boulogne, Jean; and Papantoniou, Christos, 4,126,675, Cl. 424-61.000.
Vanlerberghe, Guy; and Sebag, Henri, 4,126,702, Cl. 424-365.000.

Lorenz, Gunter; Nogaj, Alfred; Miller, Helmut; and Wilsing, Hans, to Bayer Aktiengesellschaft. Gloss-stable modacrylic fibres. 4,126,603, Cl. 526-240.000.

Louderback, Allan L. Blood control standard. 4,126,575, Cl. 252-408.000.

Lovasz nee Gaspar, Marianna: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog, Borbala; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,126,622, Cl. 260-340.300.

Lovely, John W.; and Hobbs, Robert N., to Bryant Grinder Corporation. Interform grinding machine. 4,125,967, Cl. 51-105.00R.

Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, to Block Drug Company, Inc., Reed & Carnrich Division. Aminopropionic-acids as ectoparasiticides. 4,126,700, Cl. 424-319.000.

Lowe, William T.: *See—*
Briers, Peter A.; and Lowe, William T., 4,126,350, Cl. 296-28.00C.

Lub, Dirk J. C., to N.V. Industrieele Handelscombinatie Holland. Compensation device for a crane. 4,126,298, Cl. 254-172.000.

Lucas Industries Limited: *See—*
Fry, Richard L., 4,126,061, Cl. 74-866.000.

Luceyk, Alfred R., to Johnson & Johnson; and Purolator, Inc. Blood filtration unit with manual vent means. 4,126,558, Cl. 210-429.000.

Lukyanchikov, Viktor E.; Baidalinov, Ilya V.; and Selivanov, Mikhail Y. Apparatus for selective electroplating of workpieces. 4,126,533, Cl. 204-224.00R.

Lummus Company, The: *See—*
Kwon, Joon T.; and Gelbein, Abraham P., 4,126,526, Cl. 204-98.000.

Lundquist, Eric G. Violin harp. 4,126,074, Cl. 84-313.000.

Luzio, Guillermo F., to Xerox Corporation. Servo system for maintaining constant tension on a web. 4,126,817, Cl. 318-7.000.

Lyakhov, Jury V.: *See—*
Bello, Mark B.; Gittemeier, Jury P.; Komyak, Nikolai I.; Levitin, Anatoly I.; Stolin, Valery I.; Frumkin, Semen P.; Vijunnik, Viktor S.; Leites, Anatoly B.; Lyakhov, Jury V.; Novikov, Vladlen V.; Patsiansky, Felix A.; Semyanov, Alexandr I.; and Yaroshevich, Nikolai M., 4,126,226, Cl. 209-589.000.

Lynch, Donald M.: *See—*
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,126,700, Cl. 424-319.000.

Lynch, Marine D., to Digicon Corporation. Error compensating network for digital display thermometer. 4,126,042, Cl. 73-361.000.

M&T Mfg. Co.: *See—*
Pierson, Fred W., Sr.; Pierson, Fred W., Jr.; and Weidenfeller, Gordon J., 4,125,931, Cl. 29-455.00R.

MacDonald, Glenn E.: *See—*
Sweeney, Lawrence J.; and MacDonald, Glenn E., 4,126,403, Cl. 403-2.000.

Mackey, Richard C., to Air Tool Service Company. High speed grinding tool. 4,125,968, Cl. 51-170.00R.

MacLeod, Colin J.; and Creasy, Leonard R., to Caledonian Moroccan

Construction Ltd. S.A. Reinforced structures. 4,125,981, Cl. 52-309.120.
MacWilliams, Dalton C.; and Wirt, James R., to Dow Chemical Company, The. Aqueous suspensions. 4,126,480, Cl. 106-100.000.
Maeno, Chiaki, to Fujitsu Limited. Overcurrent switch. 4,126,841, Cl. 335-154.000.
Magnetic Analysis Corporation: *See*—
Mansson, Sven E., 4,126,048, Cl. 73-611.000.
Magnifico, James S. Device for use in preparing varied layered drinks. 4,126,164, Cl. 141-286.000.
Magnuson, Howard W.; and Magnuson, Juanita C. Cover for spare wheel and tire. 4,126,169, Cl. 150-54.00B.
Magnuson, Juanita C.: *See*—
Magnuson, Howard W.; and Magnuson, Juanita C., 4,126,169, Cl. 150-54.00B.
Maguire, Paul R. Binocular assembly with improved focusing mechanism. 4,126,374, Cl. 350-47.000.
Majka, Anthony. Pill dispenser. 4,126,247, Cl. 221-2.000.
Maki, Michiyoshi: *See*—
Tamaki, Yoichi; Isomae, Seiichi; Ogirima, Masahiko; Shintani, Akira; and Maki, Michiyoshi, 4,126,880, Cl. 357-54.000.
Makimoto, Tsutomu: *See*—
Otera, Junzo; Makimoto, Tsutomu; Shinoda, Wataru; and Hattori, Norihisa, 4,126,567, Cl. 252-62.540.
Maltese, Paolo: *See*—
Barzilai, Giorgio; Ottavi, Cesare M.; Maltese, Paolo; and Reali, Paolo, 4,126,382, Cl. 350-331.000.
Mamistov, Vasily V.; Koryagin, Alexandr A.; Burov, Vladimir P.; Denisov, Vladimir F.; and Balashov, Vasily T. Drier for bulk material. 4,125,947, Cl. 34-108.000.
Mandorf, Victor, Jr.: *See*—
Montgomery, Lionel C.; Fenish, Robert G.; and Mandorf, Victor, Jr., 4,126,654, Cl. 264-63.000.
Manfroy, Willy; and Klimpel, Richard R., to Dow Chemical Company, The. Process for grinding coal or ores in a liquid medium. 4,126,276, Cl. 241-16.000.
Manfroy, Willy; and Klimpel, Richard R., to Dow Chemical Company, The. Process for grinding coal or ores in a liquid medium. 4,126,277, Cl. 241-16.000.
Manfroy, Willy; and Klimpel, Richard R., to Dow Chemical Company, The. Process for grinding coal or ores in a liquid medium. 4,126,278, Cl. 241-16.000.
Mansson, Sven E., to Magnetic Analysis Corporation. Ultrasonic pulse testing apparatus with interface gating. 4,126,048, Cl. 73-611.000.
Mantyla, Robert D.: *See*—
Lathrop, Michael A.; and Mantyla, Robert D., 4,126,450, Cl. 75-178.0AM.
Marcus, James T.; and Kennard, Harry M., to Brunswick Corporation. Filter medium. 4,126,560, Cl. 210-489.000.
Mares, Fred R.: *See*—
Colglazier, Donald F.; Fallon, John L.; Kollar, Ernest P.; and Mares, Fred R., 4,126,305, Cl. 271-120.000.
Margolin, George D.: *See*—
Broome, Barry G.; and Margolin, George D., 4,126,387, Cl. 353-77.000.
Markiw, Yarik. Soap bubble blowers. 4,125,959, Cl. 46-6.000.
Marlow, Richard Z., to Xerox Corporation. Charge pattern development method and apparatus. 4,126,711, Cl. 427-15.000.
Marlowe, Frank J., to RCA Corporation. Electron gun control system. 4,126,814, Cl. 315-307.000.
Marosan, Josef, to Smalands Industrirationalisering AB. Material-handling apparatus. 4,126,506, Cl. 156-396.000.
Marquardt, Siegfried: *See*—
Diem, Hans; Dudeck, Christian; Simmler, Werner; Marquardt, Siegfried; and Stingl, Walter, 4,126,582, Cl. 252-476.000.
Mars, Bernard S., to L.B. Foster Company. Compaction of soil. 4,126,007, Cl. 405-271.000.
Marsden, Howard A.: *See*—
Haak, Willard J.; Marsden, Howard A.; and Stemler, Orrin A., 4,126,083, Cl. 91-176.000.
Marshall, Robert M.; and Dardoufas, Kimon C., to Allied Chemical Corporation. Spin finish for polyamide carpet yarn. 4,126,564, Cl. 252-8.900.
Martensson, Kjell H., to Tetra Pak International AB. Packing container provided with opening arrangement. 4,126,263, Cl. 229-17.00R.
Martin, Charles R.; Kramer, Francis J.; and Warman, Thomas E., to Senco Products, Inc. Clamp nail driving tool. 4,126,258, Cl. 227-8.000.
Martin, Heinz, to Siemens Aktiengesellschaft. Pressure-mounted semiconductive structure. 4,126,883, Cl. 357-82.000.
Martin, Howard H. Three-wheeled farm vehicle. 4,126,198, Cl. 180-6.300.
Martin, John R.; and Block, Robert S. Method and system for accumulating data over nondedicated telephone lines. 4,126,762, Cl. 179-2.00A.
Martin, Niles J., to Westinghouse Electric Corp. Elevator car with adjustable illumination level and distribution patterns. 4,126,210, Cl. 187-1.00R.
Martin, Robert. Apparatus for playing a golf and/or putting game. 4,126,314, Cl. 273-245.000.
Martorano, Richard; and Brendley, William H., to Rohm and Haas Company. Aqueous coating compositions comprising acrylic oligomers, high molecular weight polymers and crosslinkers. 4,126,595, Cl. 260-29.4UA.
Marvin Glass & Associates: *See*—
Hicks, Alan A.; Breslow, Jeffrey D.; and Jaworski, Eugene, 4,126,309, Cl. 273-95.00R.
Maschinenfabriken Bernard Krone GmbH: *See*—
Krone, Bernard; and Ahler, Wilhelm, 4,125,987, Cl. 56-13.300.
Masciopinto, Anthony J.: *See*—
Ortloff, John E.; Masciopinto, Anthony J.; and Kirkland, Kerry G., 4,126,336, Cl. 285-136.000.
Mashford, Donald R. Snow plow attachment. 4,125,950, Cl. 37-41.000.
Mashimo, Yukio: *See*—
Suzuki, Ryoichi; Uchidoi, Masanori; Mashimo, Yukio; Taguchi, Tetsuya; Ono, Yusuke; and Aizawa, Hiroshi, 4,126,874, Cl. 354-60.00R.
Yazaki, Mutsunobu; Uchiyama, Takashi; Matsuda, Mutsuhide; Taguchi, Tetsuya; and Mashimo, Yukio, 4,126,872, Cl. 354-33.000.
Mason, Stephen B.: *See*—
Chodzko, Richard A.; and Mason, Stephen B., 4,126,381, Cl. 350-294.000.
Massardo, Pietro: *See*—
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Massey-Ferguson, Inc.: *See*—
Hern, John F., 4,126,202, Cl. 180-89.120.
Massey-Ferguson Services N.V.: *See*—
Old, John L., 4,126,328, Cl. 280-415.00A.
Massin, Daniel M., to Foseco Trading AG. Containers for molten metal. 4,126,301, Cl. 266-280.000.
Masson, James C.; and Palethorpe, George, to Monsanto Company. Method for stabilizing brightened modacrylic fibers. 4,126,412, Cl. 8-1.00W.
Masumori, Terumiti: *See*—
Doi, Yuuji; and Masumori, Terumiti, 4,126,041, Cl. 73-295.000.
Mathur, Pracheeschwar S., to General Electric Company. Method of forming hollow cylindrical parts with internal contours. 4,126,029, Cl. 72-69.000.
Matoba, Kazuo: *See*—
Takao, Hiroshi; and Matoba, Kazuo, 4,126,532, Cl. 204-195.00S.
Matsuda, Mutsuhide: *See*—
Yazaki, Mutsunobu; Uchiyama, Takashi; Matsuda, Mutsuhide; Taguchi, Tetsuya; and Mashimo, Yukio, 4,126,872, Cl. 354-33.000.
Matsumoto, Genichi: *See*—
Ibamoto, Masahiko; Kuriyama, Shigeru; and Matsumoto, Genichi, 4,126,889, Cl. 361-92.000.
Matsunaga, Toshiki: *See*—
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Matsushita Electric Industrial Co., Ltd.: *See*—
Hayakawa, Toshio; and Mitsugi, Itaru, 4,126,051, Cl. 74-10.410.
Hayashi, Yoshiaki; and Fujimori, Nobuyoshi, 4,126,888, Cl. 360-85.000.
Iimori, Nobuyuki; Koseki, Wasuke; and Ono, Atsuo, 4,126,845, Cl. 337-408.000.
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating arthropods with N,N-dimethyl-O-[3-(substituted-methyl)-pyrazol-5-yl]-carbamic acid esters. 4,126,690, Cl. 424-273.00P.
Mausner, Jack J., to Helena Rubinstein, Inc. Thickened aqueous shampoo compositions containing encapsulated conditioning agents. 4,126,674, Cl. 424-31.000.
May, Laurence M. Suctioning/oxygenating laryngoscope blade. 4,126,127, Cl. 128-11.000.
Mazzola, Louis R., to Lever Brothers Company. Encapsulated bleaches and methods for their preparation. 4,126,717, Cl. 427-220.000.
McCallum, David F. Portable barbecue device. 4,126,116, Cl. 126-9.00R.
McCarthy, John P.; Moyer, John; and Fischer, Leonard, to DCA Food Industries Inc. Method for forming a shaped comestible. 4,126,704, Cl. 426-304.000.
McCaskey, Harold O.: *See*—
Sampson, Ronald N.; and McCaskey, Harold O., 4,126,481, Cl. 106-191.000.
McCusker, Joseph H.; and Perlman, Stuart S., to RCA Corporation. Uniform surface acoustic wave transducer configuration having improved frequency selectivity. 4,126,838, Cl. 333-72.000.
McDonald, William G. Collapsible suitcase. 4,126,213, Cl. 190-18.00A.
McGeoch, Malcolm: *See*—
Fournier, Georges; and McGeoch, Malcolm, 4,126,890, Cl. 331-94.50G.
McGovern, Roger, to Montreal Engineering Company, Limited. Pipelaying under ice by bottom pull. 4,126,013, Cl. 405-169.000.
McGovern, Stephen J.: *See*—
Derr, Walter R., Jr.; Gallagher, Lawrence E.; Haddad, James H.; McGovern, Stephen J.; Schatz, Klaus W.; and Smith, Fritz A., 4,126,539, Cl. 208-108.000.
McGraw-Edison Company: *See*—
King, Joseph S.; and Huber, Robert L., 4,125,916, Cl. 15-23.000.
McGruder, Jerome. Carrier case for ice skates, roller skates, boots and shoes. 4,126,256, Cl. 224-45.00S.
McKay, James G., to Kiwi Coders Corporation. Inking ring and wheel for code daters. 4,126,090, Cl. 101-348.000.
McKinley, Richard V. Can opener adapter for beverage cans. 4,125,941, Cl. 30-427.000.
McLamb, Willie J. Cooker. 4,126,087, Cl. 99-327.000.

McLaughlin, Donald W.; and Fetterer, Gerald F., to GTE Automatic Electric Laboratories Incorporated. 3-Port conference circuit for use in private automatic branch exchange. 4,126,766, Cl. 179-18.0BC.

McLaughlin, Robert R. Construction unit. 4,125,979, Cl. 52-259.000.

McQuinn, Ted M., to General Motors Corporation. Shift signal valve hysteresis. 4,126,154, Cl. 137-625.690.

McVeen, Milford D., to Towmotor Corporation. Adjustable lock for mast hanger. 4,126,208, Cl. 187-1.00R.

Medicor Muvek: *See—*
Agoston, Mihaly, 4,126,125, Cl. 128-2.10B.

Meeker, Greg W.: *See—*
Sloan, James L.; and Meeker, Greg W., 4,126,331, Cl. 280-650.000.

Melchior, Jean F., to Etat Francais. Methods of supercharging a diesel engine, in supercharged diesel engines, and in supercharging units for diesel engines. 4,125,999, Cl. 60-606.000.

Melville-Smith, Ronald: *See—*
Lee, George A., 4,126,050, Cl. 74-26.000.

Mendelsohn, Lewis I.; and Nesbitt, Ethan A., to Allied Chemical Corporation. Flexible electromagnetic shield comprising interlaced glassy alloy filaments. 4,126,287, Cl. 245-8.000.

Mendenhall, Robert L. Asphaltic concrete recycle apparatus. 4,126,397, Cl. 366-7.000.

Mente, Alfred C.; and LePore, Paul E., to Delta Elevator Equipment Corporation. Elevator call circuit. 4,126,849, Cl. 340-19.00R.

Merck & Co., Inc.: *See—*
Cragoe, Edward J., Jr.; and Bicking, John B., 4,126,629, Cl. 260-405.000.
Di Ninno, Frank P., 4,126,692, Cl. 424-275.000.

Mertwoy, Helen: *See—*
Gisser, Henry; and Mertwoy, Helen, 4,126,736, Cl. 526-173.000.

Messing, Ralph A.; and Ramsey, William S., to Corning Glass Works. Method for distinguishing gram positive and gram negative microbes. 4,126,516, Cl. 195-103.50R.

Mettler Instrumente AG: *See—*
Schurmann, Werner, 4,126,043, Cl. 73-424.000.

Metz, Peter: *See—*
Bottcher, Kurt; and Metz, Peter, 4,126,105, Cl. 122-214.000.

Michel, Dierk: *See—*
Moller, Klaus; Michel, Dierk; Wolert, Hartmut; and Ernst, Helmut, 4,126,411, Cl. 432-80.000.

Michel, Dominique; and Serrano, Francisco de Assis M., to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris". Oscillating installation for installing in a body of water and method for its construction. 4,126,010, Cl. 405-202.000.

Michel, Dominique: *See—*
Lamy, Jacques E.; Michel, Dominique; and Serrano, Francisco de Assis M., 4,126,011, Cl. 405-196.000.

Michl, Uwe: *See—*
Gommel, Karl-Werner; Michl, Uwe; and Radtke, Hans, 4,126,376, Cl. 350-90.000.

Michlovic, John J., to H. H. Robertson Company. Internally composite cellular section and composite slab assembled therefrom. 4,125,977, Cl. 52-220.000.

Mickelsson, Conny O., to Isabergs Verkstads AB. Machine for driving fasteners into objects. 4,126,260, Cl. 227-132.000.

Microtel B.V.: *See—*
Broersma, Harmen, 4,126,769, Cl. 179-115.00A.

Midcon Pipeline Equipment Co.: *See—*
Clavin, Edward A., 4,126,065, Cl. 82-4.00C.

Middelbeek, Cornelis Gerardus, to Ballast Nedam Groep N.V. Method for collecting light-weight substances floating on a liquid surface. 4,126,552, Cl. 210-83.000.

Middlebrook, Terence C., to Phillips Petroleum Co., Inc. Method for limiting gloss of injection moldable polymers. 4,126,662, Cl. 264-328.000.

Mika, Herbert L. Anti-overturning vehicle. 4,126,322, Cl. 280-6.110.

Miller, Dale E., to Continental Oil Company. Air-coupled seismic detector. 4,126,203, Cl. 181-109.000.

Miller, Gerald K., to Nartron Corporation. Sealed battery cable assembly. 4,126,367, Cl. 339-29.00B.

Miller, Helmut; and Baumann, Kurt, to Escher Wyss Limited. Francis-type hydraulic machine. 4,126,360, Cl. 308-9.000.

Miller, Helmut: *See—*
Lorenz, Gunter; Nogaj, Alfred; Miller, Helmut; and Wilsing, Hans, 4,126,603, Cl. 526-240.000.

Miller, Morris L.; and Locker, Daniel, to Scientific Research Foundation, The. Vehicle drive system. 4,126,200, Cl. 180-66.00R.

Miller, Paul W., to Hairegenics, Inc. Method of sizing a hair anchor. 4,126,124, Cl. 128-1.00R.

Mimura, Yoshinori: *See—*
Imamura, Nobutake; Mimura, Yoshinori; and Kobayashi, Toshihiko, 4,126,494, Cl. 148-31.570.

Mincer, Joseph L.: *See—*
Creatura, John A.; and Mincer, Joseph L., 4,126,458, Cl. 96-1.0SD.

Minnesota Mining and Manufacturing Company: *See—*
Archibald, G. Kent, 4,126,137, Cl. 128-303.140.
Rude, Harold E., 4,126,428, Cl. 51-295.000.

Mino, Yuji: *See—*
Wakaizumi, Kiyoaki; Matsunaga, Toshiki; and Mino, Yuji, 4,126,525, Cl. 204-67.000.

Minolta Camera Kabushiki Kaisha: *See—*
Ikeda, Hiroshi; and Arai, Kenichi, 4,126,389, Cl. 355-13.000.
Kawai, Yoshihisa, 4,126,388, Cl. 355-1.000.
Ogino, Shuji, 4,126,378, Cl. 350-214.000.
Yamamoto, Shunji, 4,126,101, Cl. 118-661.000.

Miraldi, Robert V. Foundation, method of constructing same and parts useable therein. 4,125,980, Cl. 52-293.000.

Miranda Investments Limited: *See—*
Reilly, Frederick W., 4,126,364, Cl. 312-140.000.

Misumi, Teruyuki; Miyaji, Toshio; and Kasai, Masao, to Asahi Kasei Kogyo Kabushiki Kaisha. Ion exchange process. 4,126,548, Cl. 210-33.000.

Mita Industrial Company Ltd.: *See—*
Nishihama, Hitoshi; Gotoda, Katsuhiko; Motomura, Minoru; Nakajima, Takanobu; and Aizawa, Tatsuo, 4,126,100, Cl. 118-658.000.

Mitamura, Hideyuki: *See—*
Oohara, Kunio; Shizuki, Tatsuhiko; Mitamura, Hideyuki; and Sugino, Masahiro, 4,126,652, Cl. 264-29.600.

Mitchell, James E.: *See—*
Alms, Erhard E.; and Mitchell, James E., 4,126,855, Cl. 340-381.000.

Mitchell, Joseph I. Washing attachment for artificial arms. 4,125,905, Cl. 3-12.800.

Mitsubishi Corporation: *See—*
Sugahara, Yujiro; Naito, Hiroyuki; Okubo, Tokio; and Omori, Nobuo, 4,126,599, Cl. 260-42.130.

Mitsubishi Keikinzoku Kogyo Kabushiki Kaisha: *See—*
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Mitsugi, Itaru: *See—*
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Mitsui Toatsu Chemicals, Incorporated: *See—*
Shiomura, Tetsunosuke; Ooka, Tatuo; and Sadatomo, Hideo, 4,126,743, Cl. 528-503.000.
Yamamoto, Kousuke; and Takenaka, Shinji, 4,126,716, Cl. 427-215.000.

Miyaji, Toshio: *See—*
Misumi, Teruyuki; Miyaji, Toshio; and Kasai, Masao, 4,126,548, Cl. 210-33.000.

Miyake, Haruhisa: *See—*
Ukihashi, Hiroshi; Asawa, Tatsuro; Yamabe, Masaaki; Gunjima, Tomoki; and Miyake, Haruhisa, 4,126,588, Cl. 521-31.000.

Miyamae, Yasuo, to Sanpo Lock Co., Ltd. Locking device. 4,126,025, Cl. 70-360.000.

Miyauchi, Hirotsugu: *See—*
Hamada, Masato; Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; and Yamamoto, Fumihiko, 4,126,589, Cl. 521-31.000.

Miyazaki, Michio; and Nozawa, Masafumi, to Hitachi, Ltd. Method of controlling rotary memory. 4,126,887, Cl. 360-49.000.

Miyazako, Takushi; Toriya, Itsuki; and Hirose, Masuhiko, to Fuji Photo Film Co., Ltd. Silver halide photographic materials having improved anti-static properties. 4,126,467, Cl. 96-87.00A.

Miyazi, Kazumi: *See—*
Ichikawa, Hiroki; Miyazi, Kazumi; and Kusuyama, Michio, 4,126,284, Cl. 242-201.000.

Mizusawa Kagaku Kogyo Kabushiki Kaisha: *See—*
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Mobil Oil Corporation: *See—*
Caesar, Philip D.; Garwood, William E.; Peters, Alan W.; and Wise, John J., 4,126,644, Cl. 260-676.00R.
Derr, Walter R., Jr.; Gallagher, Lawrence E.; Haddad, James H.; McGovern, Stephen J.; Schatz, Klaus W.; and Smith, Fritz A., 4,126,539, Cl. 208-108.000.
Kaufman, Marvin L., 4,126,527, Cl. 204-159.220.

Moertel, George B., to Textron Inc. Article with venting slide fastener. 4,125,911, Cl. 5-347.000.

Molari, Richard Edgar, Jr., to General Electric Company. Laminates. 4,126,730, Cl. 428-412.000.

Moller, Klaus; Michel, Dierk; Wolert, Hartmut; and Ernst, Helmut, to Dravo Corporation. Round cooler for hot bulk material. 4,126,411, Cl. 432-80.000.

Molnar, Gabor V.: *See—*
Sullivan, William B.; Tresidder, James M., Jr.; and Molnar, Gabor V., 4,126,860, Cl. 343-5.0NA.

Molson, Fred W. R.: *See—*
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Monsanto Company: *See—*
Cartier, George E., 4,126,601, Cl. 260-42.270.
Masson, James C.; and Palethorpe, George, 4,126,412, Cl. 8-1.00W.

Montclair Research Corporation: *See—*
Grossman, Harold, 4,126,141, Cl. 131-9.000.

Montedison S.p.A.: *See—*
Piccardi, Paolo; Massardo, Pietro; and Longoni, Angelo, 4,126,623, Cl. 260-340.50R.

Monteiro, Charles C. Paint roller cleaner and method. 4,126,484, Cl. 134-34.000.

Montgomery, Lionel C.; Fenish, Robert G.; and Mandorf, Victor, Jr., to Union Carbide Corporation. Alumina or alumina-chromia refractories. 4,126,654, Cl. 264-63.000.

Montreal Engineering Company, Limited: *See—*
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Monzie, Pierre; Chaunis, Serge; Goullioud, Pierre; and Laine, Patrick, to Centre Technique de L'Industrie des Papiers, Cartons et Celluloses et Technique Papetiere Avancee. Method of for manufacturing filaments of viscose. 4,126,656, Cl. 264-83.000.

Mookherjee, Braja D.; Evers, William J.; and Goossens, Alfred E., to International Flavors & Fragrances Inc. Flavoring with 2-acyl-5-substituted thiatetrahydrofuran-4-ones. 4,126,708, Cl. 426-535.000.

Mookherjee, Braja D.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,569, Cl. 252-89.00R.
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Moore Business Forms, Inc.: *See—*
Van Malderghem, Edmund G., 4,126,334, Cl. 282-22.00R.

Moore, David M.; and Morris, Larry R., to Alcan Research and Development Limited. Superplastic aluminum alloy products and method of preparation. 4,126,448, Cl. 75-146.000.

Moore, Donald G., to Chemetron Corporation. Method of preparing food items for subsequent rethermalization in a microwave oven. 4,126,776, Cl. 219-10.55M.

Moore, Donald G., to Chemetron Corporation. Method of automatically rethermalizing previously prepared food for consumption. 4,126,777, Cl. 219-10.55M.

Moore Products Co.: *See—*
Kirk, David B., 4,126,152, Cl. 137-85.000.

Moorey, Ernest J. Timing unit. 4,126,795, Cl. 307-293.000.

Moraly, Alain: *See—*
Trinh, Stephane; Moraly, Alain; and Gaulliard, Jean-Michel, 4,126,678, Cl. 424-217.000.

Moran, Henry W.: *See—*
Welstead, William J., Jr.; and Moran, Henry W., 4,126,635, Cl. 562-441.000.

Moraw, Roland, to Hoechst Aktiengesellschaft. Holographic identification elements and method and apparatus for manufacture thereof. 4,126,373, Cl. 350-3.610.

Morgan, John R.: *See—*
Donakowski, William A.; and Morgan, John R., 4,126,483, Cl. 134-3.000.

Moriarty, James P.; and Birhanzl, Craig N. Flexible sheet rollup window structure. 4,126,174, Cl. 160-266.000.

Moriizumi, Toyosaka: *See—*
Shiokawa, Showko; Kusakabe, Takaaki; Moriizumi, Toyosaka; and Yasuda, Tsutomu, 4,126,800, Cl. 310-313.000.

Morikawa, Nobutaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Catalytic converter vessel. 4,126,421, Cl. 422-177.000.

Morita, Masayuki; Kawaharazaki, Takashi; and Shimogawa, Toshiaki, to Nippon Soken, Inc. Seat belt retracting and winding device. 4,126,282, Cl. 242-107.000.

Morris, Larry R.; and Thomson, John D., to Alcan Research and Development Limited. Producing improved metal alloy products. 4,126,486, Cl. 148-2.000.

Morris, Larry R.; and Thomson, John D., to Alcan Research and Development Limited. Producing improved metal alloy products (Al-Fe alloy and Al-Fe-Si alloy). 4,126,487, Cl. 148-2.000.

Morris, Larry R.: *See—*
Moore, David M.; and Morris, Larry R., 4,126,448, Cl. 75-146.000.

Moscony, John J.; and Gadbois, George S., to RCA Corporation. Etching a succession of articles from a strip of sheet metal. 4,126,510, Cl. 156-626.000.

Moser, Hans; and Schurter, Rolf, to Ciba-Geigy Corporation. Hydroxamic acid derivatives for regulating plant growth. 4,126,440, Cl. 71-76.000.

Motomura, Minoru: *See—*
Nishihama, Hitoshi; Gotoda, Katsuhiko; Motomura, Minoru; Nakajima, Takanobu; and Aizawa, Tatsuo, 4,126,100, Cl. 118-658.000.

Movchan, Boris A.; Timashov, Viktor A.; and Chaika, Nikolai V. Electron gun with linear thermionic cathode for electron-beam heating. 4,126,811, Cl. 313-453.000.

Mowli, John C.; and Bala, Harry. Method of producing a reclosable bag. 4,126,085, Cl. 93-35.00R.

Moxness, Sherman U.: *See—*
Phillips, David L.; Moxness, Sherman U.; and Emery, Robert D., 4,126,398, Cl. 366-76.000.

Moyer, John: *See—*
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Muller, Gunter; and Blankenhorn, Gerhard, to Badische Maschinenfabrik GmbH. Foundry molding machine for box molds. 4,126,176, Cl. 164-160.000.

Muller, Horst; Schmidt, Edgar; Frey, Volker; and Riedle, Rudolf, to Wacker-Chemie GmbH. Process for preparing oxime containing silicon compounds. 4,126,630, Cl. 260-448.20E.

Muller, Lisbet: *See—*
Lindner, Heinz; Georgi, Wolfgang; Muller, Lisbet; Stopp, Fritz; and Oehm, Werner, 4,126,019, Cl. 66-84.00R.

Munnekehoff, Gerd, to Barmag Barmer Maschinenfabrik AG. Winding devices for spooling yarns. 4,126,279, Cl. 242-18.0DD.

Murata, Yukishige, to Sony Corporation. Card recording and/or reproducing apparatus. 4,126,885, Cl. 360-2.000.

Murphy, Richard J., to Xerox Corporation. Fusing surface. 4,126,722, Cl. 428-339.000.

Murray, Robert G., to Koppelman, Edward. Apparatus and method for thermal treatment of organic carbonaceous material. 4,126,519, Cl. 201-32.000.

Myers, Raymond L.: *See—*
Tyson, George F.; Keeler, Robert A.; and Myers, Raymond L., 4,126,230, Cl. 211-50.000.

Nagai, Nobuo, to Nintendo Co., Ltd. Light emission weapon with shutter members. 4,126,310, Cl. 273-101.100.

Nagano, Mitsuo: *See—*
Nakao, Hideo; Yanagisawa, Hiroaki; Shimizu, Bunji; Kaneko, Masakatsu; Nagano, Mitsuo; and Sugawara, Shinichi, 4,126,745, Cl. 544-21.000.

Nagao, Shozo; O'Hashi, Yoshinobu; and Watanabe, Yuichi, to Kubota, Ltd. Separation-preventive type pipe joint. 4,126,337, Cl. 285-231.000.

Naito, Hiroyuki: *See—*
Sugahara, Yujiro; Naito, Hiroyuki; Okubo, Tokio; and Omori, Nobuo, 4,126,599, Cl. 260-42.130.

Naito, Naoki: *See—*
Tamaki, Kentaro; Naito, Naoki; Nishimura, Fumio; Fujii, Kyoichi; and Nakamura, Nobuo, 4,126,686, Cl. 424-267.000.

Nakagawa, Taizo; Suzuki, Toshiyuki; Watanabe, Yutaka; Ohmori, Kaoru; Tejima, Iwao; Yamada, Osamu; and Ishida, Shuichi, to Nippon Kayaku Kabushiki Kaisha. 4-Alkylsulfonyloxyphenyl N-alkylthiolcarbamates and use thereof as fungicide for agriculture. 4,126,696, Cl. 424-300.000.

Nakagawa, Yasuichi; Ikenishi, Masataka; Kushida, Shozo; and Tsukutani, Hirokazu, to Kabushiki Kaisha Daini Seikosha. Train structure of a timepiece. 4,125,994, Cl. 58-59.000.

Nakaji, Hideki: *See—*
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,126,492, Cl. 148-12.00E.

Nakajima, Takanobu: *See—*
Nishihama, Hitoshi; Gotoda, Katsuhiko; Motomura, Minoru; Nakajima, Takanobu; and Aizawa, Tatsuo, 4,126,100, Cl. 118-658.000.

Nakamine, Yoshimi: *See—*
Ikeda, Mitsuru; Ikeda, Teppei; Teramoto, Yoshihiko; Yasutake, Masatoshi; and Nakamine, Yoshimi, 4,126,032, Cl. 73-15.00B.

Nakamura, Nobuo: *See—*
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Nakamura, Shigeru: *See—*
Sumikama, Sadao; Nakamura, Shigeru; Shirato, Kozo; Hiraizumi, Kazuo; Takasu, Nobuo; Taguchi, Mitsuru; Yamada, Tsuyoshi; and Ishiguro, Susumu, 4,126,393, Cl. 356-130.000.

Nakamura, Zenzo: *See—*
Ohtaki, Syohei; Nakamura, Zenzo; Tsunekawa, Tokuichi; Ito, Tadashi; Aizawa, Hiroshi; and Uchiyama, Takashi, 4,126,877, Cl. 354-149.000.

Nakao, Hideo; Yanagisawa, Hiroaki; Shimizu, Bunji; Kaneko, Masakatsu; Nagano, Mitsuo; and Sugawara, Shinichi, to Sankyo Company Limited. 7-Methoxycephalosporin derivatives. 4,126,745, Cl. 544-21.000.

Nanoux, Jean: *See—*
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Narazaki, Tokuro: *See—*
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Nartron Corporation: *See—*
Bull, David W.; and Rautiola, Norman A., 4,126,375, Cl. 350-58.000.
Miller, Gerald K., 4,126,367, Cl. 339-29.00B.

Natalizia, Angelo, to International Telephone and Telegraph Corporation. Ball valve having metal seat rings. 4,126,295, Cl. 251-315.000.

National Research Development Corporation: *See—*
Gordon, John A., 4,126,760, Cl. 178-18.000.

National Semiconductor Corporation: *See—*
Dobkin, Robert C., 4,126,826, Cl. 324-127.000.

Nayar, Harbhajan S., to Airco, Inc. Manufacture of plates by powder-metallurgy. 4,126,451, Cl. 75-208.00R.

Neely, Liston E.: *See—*
Downey, David L.; Kennedy, James A.; and Neely, Liston E., 4,126,764, Cl. 179-15.0BA.

Negrini, Maurice A. Steering wheel microphone bracket assembly. 4,126,827, Cl. 325-16.000.

Neilson, William J.: *See—*
Dixon, Robert L.; and Neilson, William J., 4,126,195, Cl. 175-364.000.

Neiman, Alexandr A.: *See—*
Genrikh, Georgy A.; Nikonets, Leonid A.; Khrusch, Petr R.; Oleinik, Vladimir P.; and Neiman, Alexandr A., 4,126,792, Cl. 307-112.000.

Nel, Pierre E., to Polaroid Corporation. Film pack with means for urging positive and negative sheets together. 4,126,465, Cl. 96-76.00C.

Nelson, Delbert G.: *See—*
Shelby, Robert L.; and Nelson, Delbert G., 4,126,058, Cl. 74-606.00R.

Nelson, Eldrid W.; and Auth, Thomas L., to Chas. Olson & Sons; and Wheel Service Co., Inc. Truck body with modular construction. 4,126,349, Cl. 296-24.00R.

Nelson Holland, Henry A.: *See—*
Gendron, George J.; and Nelson Holland, Henry A., 4,126,191, Cl. 173-1.000.

Nelson, Norman A.: *See—*
Bundy, Gordon L.; and Nelson, Norman A., 4,126,754, Cl. 560-53.000.
Neogi, Sreeman A. N.: *See—*
Allan, G. Graham; and Neogi, Sreeman A. N., 4,126,445, Cl. 71-94.000.
Nesbitt, Ethan A.: *See—*
Mendelsohn, Lewis I.; and Nesbitt, Ethan A., 4,126,287, Cl. 245-8.000.
Newland, Julian H.: *See—*
Coiner, Marsha H.; Haylock, John C.; Newland, Julian H.; and Schwartz, Judd L., 4,126,415, Cl. 8-115.500.
Nicholai, Wassillie P. Lazy man's sleeping bag. 4,125,910, Cl. 5-343.000.
Nicolau, Albert: *See—*
Signouret, Jean Baptiste; and Nicolau, Albert, 4,126,482, Cl. 106-274.000.
Nijman, John P., to Bunker Ramo Corporation. Filter connector with radial mounting means. 4,126,370, Cl. 339-143.00R.
Nikonets, Leonid A.: *See—*
Genrikh, Georgy A.; Nikonets, Leonid A.; Khrusch, Petr R.; Oleinik, Vladimir P.; and Neiman, Alexandr A., 4,126,792, Cl. 307-112.000.
Nilan, Thomas G.; and Rudolph, Ralph G., to United States Steel Corporation. Surface roughness analyzer. 4,126,036, Cl. 73-105.000.
Nintendo Co., Ltd.: *See—*
Nagai, Nobuo, 4,126,310, Cl. 273-101.100.
Nippon Denso Co., Ltd.: *See—*
Akado, Hajime; Yamaguchi, Akihide; and Uchida, Yoshiro, 4,126,109, Cl. 123-122.00D.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Kurosaki, Makoto, 4,126,075, Cl. 84-421.000.
Takabayashi, Youjiro, 4,126,073, Cl. 84-293.000.
Nippon Kayaku Kabushiki Kaisha: *See—*
Nakagawa, Taizo; Suzuki, Toshiyuki; Watanabe, Yutaka; Ohmori, Kaoru; Tejima, Iwao; Yamada, Osamu; and Ishida, Shuichi, 4,126,696, Cl. 424-300.000.
Nippon Soken, Inc.: *See—*
Morita, Masayuki; Kawaharazaki, Takashi; and Shimogawa, Toshiaki, 4,126,282, Cl. 242-107.000.
Nippon Steel Corporation: *See—*
Doi, Yuuji; and Masumori, Terumiti, 4,126,041, Cl. 73-295.000.
Nippon Telegraph and Telephone Public Corporation: *See—*
Koyamada, Yahei; and Ishihara, Fujio, 4,126,837, Cl. 333-72.000.
Nippondenso Co., Ltd.: *See—*
Harada, Susumu; and Endo, Kunio, 4,126,107, Cl. 123-32.0EH.
Nishihama, Hitoshi; Gotoda, Katsuhiko; Motomura, Minoru; Nakajima, Takanobu; and Aizawa, Tatsuo, to Mita Industrial Company Ltd. Apparatus for causing a developer powder to make an irregular motion in a developing zone. 4,126,100, Cl. 118-658.000.
Nishimoto, Kanichi, to Noritsu Koki Co., Ltd. Photographic processing apparatus. 4,126,391, Cl. 355-27.000.
Nishimura, Fumio: *See—*
Tamaki, Kentaro; Naito, Naoki; Nishimura, Fumio; Fujii, Kyoichi; and Nakamura, Nobuo, 4,126,686, Cl. 424-267.000.
Nishizawa, Jun-ichi; and Kimura, Mitsuhiro, to Semiconductor Research Foundation; and Tohoku Metal Industries Limited. Sapphire single crystal substrate for semiconductor devices. 4,126,731, Cl. 428-446.000.
Nissan Motor Company, Limited: *See—*
Takao, Hiroshi; and Matoba, Kazuo, 4,126,532, Cl. 204-195.00S.
Nissen, Alex: *See—*
Barouh, Roger; and Nissen, Alex, 4,126,842, Cl. 335-213.000.
Nogaj, Alfred: *See—*
Lorenz, Gunter; Nogaj, Alfred; Miller, Helmut; and Wilsing, Hans, 4,126,603, Cl. 526-240.000.
Nomura, Yukihiko: *See—*
Ueno, Teietsu; Sato, Kazuo; Sugawara, Kohji; Takamura, Shuji; Tanaka, Masami; Nomura, Yukihiko; and Tsujioka, Isao, 4,126,846, Cl. 338-184.000.
Nordson Corporation: *See—*
Harjar, Martin J.; and Hastings, Donald R., 4,126,321, Cl. 277-113.000.
Noritsu Koki Co., Ltd.: *See—*
Nishimoto, Kanichi, 4,126,391, Cl. 355-27.000.
Norstrom, Gote J. W., to Uddeholms Aktiebolag. Degreasing apparatus. 4,126,148, Cl. 134-135.000.
Norton Company: *See—*
Watson, George R., 4,126,429, Cl. 51-309.00R.
Novanex Automation N.V.: *See—*
Laupman, Robert R., 4,126,829, Cl. 330-110.000.
Novikov, Vladlen V.: *See—*
Bello, Mark B.; Gittemeier, Jury P.; Komyak, Nikolai I.; Levitin, Anatoly I.; Stolin, Valery I.; Frumkin, Semen P.; Vijunnik, Viktor S.; Leites, Anatoly B.; Lyakhov, Jury V.; Novikov, Vladlen V.; Patsiansky, Felix A.; Semyanov, Alexandr I.; and Yaroshevich, Nikolai M., 4,126,226, Cl. 209-589.000.
Novotny, Miroslav; and Anderson, Lowell R., to Allied Chemical Corporation. Homologation of methanol with a carbon monoxide-water mixture. 4,126,752, Cl. 568-902.000.
Nozawa, Masafumi: *See—*
Miyazaki, Michio; and Nozawa, Masafumi, 4,126,887, Cl. 360-49.000.
Nozemack, Richard J.: *See—*
Flaherty, Theodore V., Jr.; Nozemack, Richard J.; and Guidry, Hanson L., 4,126,579, Cl. 252-455.00Z.
N.V. Industrieele Handelscombinatie Holland: *See—*
Lub, Dirk J. C., 4,126,298, Cl. 254-172.000.
O & K Orenstein & Koppel Aktiengesellschaft: *See—*
Bertram, Claus, 4,126,155, Cl. 137-625.690.
Obenaus, Fritz: *See—*
Scholz, Bernhard; Obenaus, Fritz; Franz, Gerhard; Erberich, Hans-Jurgen; and Reitemeyer, Heinz-Otto, 4,126,748, Cl. 560-239.000.
Oberhelman, Henry A., to Esco Corporation. Hood for steel processing vessel. 4,126,300, Cl. 266-158.000.
Obermayer, Bertram: *See—*
List, Hans; Greier, Josef; Obermayer, Bertram; Fachbach, Heinz; and Skatsche, Othmar, 4,126,115, Cl. 123-198.00E.
Occidental Oil Shale, Inc.: *See—*
Cha, Chang Y., 4,126,180, Cl. 166-261.000.
Oehm, Werner: *See—*
Lindner, Heinz; Georgi, Wolfgang; Muller, Lisbet; Stopp, Fritz; and Oehm, Werner, 4,126,019, Cl. 66-84.00R.
Oesterlin, Rudolf: *See—*
Bell, Malcolm R.; and Oesterlin, Rudolf, 4,126,620, Cl. 260-326.250.
Ogawa, Tadashi: *See—*
Sakai, Takeo; and Ogawa, Tadashi, 4,126,472, Cl. 96-110.000.
Ogi, Kenji; and Sakamoto, Masakatsu, to Trio Kabushiki Kaisha. Speaker system. 4,126,204, Cl. 181-156.000.
Ogino, Shuji, to Minolta Camera Kabushiki Kaisha. Telephoto lens system having an improved focusing capability. 4,126,378, Cl. 350-214.000.
Ogirima, Masahiko: *See—*
Tamaki, Yoichi; Isomae, Seiichi; Ogirima, Masahiko; Shintani, Akira; and Maki, Michiyoshi, 4,126,880, Cl. 357-54.000.
O'Hashi, Yoshinobu: *See—*
Nagao, Shozo; O'Hashi, Yoshinobu; and Watanabe, Yuichi, 4,126,337, Cl. 285-231.000.
Ohio State University Research Foundation: *See—*
Pelton, Edward L., 4,126,866, Cl. 343-909.000.
Ohmori, Kaoru: *See—*
Nakagawa, Taizo; Suzuki, Toshiyuki; Watanabe, Yutaka; Ohmori, Kaoru; Tejima, Iwao; Yamada, Osamu; and Ishida, Shuichi, 4,126,696, Cl. 424-300.000.
Ohmstede, Bob: *See—*
Cawley, Don; and Ohmstede, Bob, 4,125,928, Cl. 29-282.000.
Ohmstede Machine Works, Inc.: *See—*
Cawley, Don; and Ohmstede, Bob, 4,125,928, Cl. 29-282.000.
Ohnemuller, Dieter: *See—*
Bader, Dietrich; Berger, Engelbert; Ohnemuller, Dieter; and Reiprich, Sieghard, 4,126,803, Cl. 313-55.000.
Ohno, Nobuhiro: *See—*
Koyanagi, Takuji; and Ohno, Nobuhiro, 4,126,719, Cl. 428-35.000.
O'Horo, Michael P., to Xerox Corporation. Magnetic glass carrier materials. 4,126,437, Cl. 65-21.000.
Ohtaki, Syohei; Nakamura, Zenzo; Tsunekawa, Tokuichi; Ito, Tadashi; Aizawa, Hiroshi; and Uchiyama, Takashi, to Canon Kabushiki Kaisha. Safety device for an exposure amount control equipment. 4,126,877, Cl. 354-149.000.
Oiji, Yoshimasa: *See—*
Yoshina, Shigetaka, deceased; Yoshina, Teruko, legal heir; Kameyama, Tsutomu; Oiji, Yoshimasa; and Kiyohara, Akira, 4,126,625, Cl. 260-346.220.
Okazaki, Narukazu; and Azuma, Hiroshi, to Wakayama Iron Works, Ltd. Apparatus for gas-singeing knitted fabrics. 4,125,921, Cl. 26-3.000.
Okishi, Yoshio, to Fuji Photo Film Co., Ltd. Light sensitive printing plate comprising a matted overlayer. 4,126,460, Cl. 96-35.100.
Okor, Joseph K. Programmable television game system. 4,126,851, Cl. 340-324.0AD.
Okubo, Tokio: *See—*
Sugahara, Yujiro; Naito, Hiroyuki; Okubo, Tokio; and Omori, Nobuo, 4,126,599, Cl. 260-42.130.
Okuda, Hiroji, to Koyo Seiko Company Limited. Apparatus for interconnecting rotary shafts. 4,126,018, Cl. 64-23.000.
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, to Honda Giken Kogyo Kabushiki Kaisha. Brake disc and process for producing the same. 4,126,492, Cl. 148-12.00E.
Olander, Karl E., to Alfa-Laval AB. Control apparatus for automatic removal of milking means. 4,126,103, Cl. 119-14.080.
Old, John L., to Massey-Ferguson Services N.V. Hitches. 4,126,328, Cl. 280-415.00A.
Oleinik, Vladimir P.: *See—*
Genrikh, Georgy A.; Nikonets, Leonid A.; Khrusch, Petr R.; Oleinik, Vladimir P.; and Neiman, Alexandr A., 4,126,792, Cl. 307-112.000.
Olmstead, John A.: *See—*
Kessler, Sebastian W., Jr.; and Olmstead, John A., 4,126,879, Cl. 357-82.000.
Olson, David V. Ski boot carrier. 4,126,255, Cl. 224-45.00S.
Olympus Optical Co., Ltd.: *See—*
Goto, Astuo, 4,126,377, Cl. 350-184.000.
Ichikawa, Hiroki; Miyazi, Kazumi; and Kusuyama, Michio, 4,126,284, Cl. 242-201.000.
Omori, Nobuo: *See—*
Sugahara, Yujiro; Naito, Hiroyuki; Okubo, Tokio; and Omori, Nobuo, 4,126,599, Cl. 260-42.130.
Ono, Atsuo: *See—*
Iimori, Nobuyuki; Koseki, Wasuke; and Ono, Atsuo, 4,126,845, Cl. 337-408.000.

Ono, Yusuke: *See*—
Suzuki, Ryoichi; Uchidoi, Masanori; Mashimo, Yukio; Taguchi, Tetsuya; Ono, Yusuke; and Aizawa, Hiroshi, 4,126,874, Cl. 354-60.00R.

Oohara, Kunio; Shizuki, Tatsuhiko; Mitamura, Hideyuki; and Sugino, Masahiro, to Toyo Boseki Kabushiki Kaisha. Process for preparation of a metal carbide-containing molded product. 4,126,652, Cl. 264-29.600.

Ooka, Tatuo: *See*—
Shiomura, Tetsunosuke; Ooka, Tatuo; and Sadatomo, Hideo, 4,126,743, Cl. 528-503.000.

Oosterling, Pieter A.; and Van Zweeden, Adriaan, to Expert N.V. Device for compressing crop into bales. 4,126,089, Cl. 100-250.000.

Orawiec, Thomas M., to Westinghouse Electric Corp. Electrical switchboard apparatus with integral traveling lifting mechanism. 4,126,232, Cl. 212-11.000.

Orthuber, Richard K., to International Telephone and Telegraph Corporation. Direct view device. 4,126,813, Cl. 315-11.000.

Ortloff, John E.; Masciopinto, Anthony J.; and Kirkland, Kerry G., to Exxon Production Research Company. Multiline swivel. 4,126,336, Cl. 285-136.000.

Orzechowski, John F., to Raybestos-Manhattan, Inc. Apparatus and method for refining asbestos dispersions. 4,126,541, Cl. 209-240.000.

Osborne, Michael W.: *See*—
Alford, John A.; and Osborne, Michael W., 4,126,604, Cl. 260-97.500.

Otera, Junzo; Makimoto, Tsutomu; Shinoda, Wataru; and Hattori, Norihisa, to Kuraray Co., Ltd.; and Toda Kogyo Corporation. Permanent magnet composites and method therefor. 4,126,567, Cl. 252-62.540.

Otis Engineering Corporation: *See*—
Long, Olen R., 4,126,179, Cl. 166-64.000.

Otsuka, Yoshinori: *See*—
Fujie, Kunio; Otsuka, Yoshinori; Kunugi, Yoshifumi; and Kudo, Mituo, 4,126,015, Cl. 62-284.000.

Otsuki, Keizo: *See*—
Saeki, Jun-Ichi; Kaneda, Aizo; and Otsuki, Keizo, 4,126,292, Cl. 249-110.000.

Ottavi, Cesare M.: *See*—
Barzilai, Giorgio; Ottavi, Cesare M.; Maltese, Paolo; and Reali, Paolo, 4,126,382, Cl. 350-331.000.

Overby, Vernon V. Portable animal sprayer. 4,126,104, Cl. 119-159.000.

Ovutime, Inc.: *See*—
Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, 4,126,035, Cl. 73-60.000.

Owens-Corning Fiberglas Corporation: *See*—
Richardson, Tom A.; Haggerty, William N.; and Krautz, Fred G., 4,126,729, Cl. 428-389.000.

Owens-Illinois, Inc.: *See*—
Aust, John J., 4,126,222, Cl. 206-326.000.
Elser, William F., 4,126,244, Cl. 220-268.000.
Wedding, Donald K.; Fein, Michael E.; Ernsthausen, Roger E.; and Byrum, Bernard W., Jr., 4,126,807, Cl. 313-188.000.
Wedding, Donald K.; Ernsthausen, Roger E.; Byrum, Bernard W., Jr.; and Fein, Michael E., 4,126,809, Cl. 313-221.000.

Ozaki, Ichiro, to Glory Kogyo Kabushiki Kaisha. Coin delivering device of coin processing machine. 4,126,146, Cl. 133-3.00A.

P. R. Mallory & Co. Inc.: *See*—
Borbely, Alexander S., 4,126,584, Cl. 252-518.000.

Palanos, Paul N. Methods of making inlays using laser engraving. 4,126,500, Cl. 156-154.000.

Palethorpe, George: *See*—
Masson, James C.; and Palethorpe, George, 4,126,412, Cl. 8-1.00W.

Palitex Project Company GmbH: *See*—
Kallmann, Jurgen, 4,125,992, Cl. 57-58.830.

Pall Corporation: *See*—
Cooper, Roydon B., 4,126,559, Cl. 210-445.000.

Palmer Engineering Company Ltd.: *See*—
Black, Donald S., 4,126,181, Cl. 166-280.000.

Palmer, Melvin J., to BJ-Hughes, Inc. Universal handling head for a pipe racker. 4,126,348, Cl. 294-88.000.

Palmer, Richard R. Wrench sockets. 4,126,063, Cl. 81-121.00R.

Panusch, Erwin: *See*—
Sobolev, Igor; and Panusch, Erwin, 4,126,473, Cl. 106-15.0FP.

Papantoniou, Christos: *See*—
Boulogne, Jean; and Papantoniou, Christos, 4,126,675, Cl. 424-61.000.

Pappas, Dennis G.; Baum, Matthew C.; Small, Samuel N.; Adams, Robert T.; and Freedman, Robert P., to Pappas, Dennis G. Switch for detecting tire pressure. 4,126,772, Cl. 200-61.250.

Paquet, Alenka M., to Canadian Patents and Development Limited. Acylation of amino acids. 4,126,628, Cl. 260-404.500.

Parker-Hannifin Corporation: *See*—
Clark, Charles R.; Clark, Richard J.; and Steele, Gerald G., 4,126,162, Cl. 141-98.000.

Pars, Harry G.: *See*—
Razdan, Raj K.; Dalzell, Haldean C.; and Pars, Harry G., 4,126,694, Cl. 424-283.000.
Razdan, Raj K.; Dalzell, Haldean C.; Terris, Barbara Z.; and Pars, Harry G., 4,126,695, Cl. 424-283.000.

Parsons, Michael E.: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Parsons, Michael E., 4,126,670, Cl. 424-9.000.

Pate, Paul E. Monocoque cell. 4,125,972, Cl. 52-79.120.

Patient Care Products, Inc.: *See*—
Smith, J. Weston; and Gottwalt, David J., 4,126,167, Cl. 150-8.000.

Patsiansky, Felix A.: *See*—
Bello, Mark B.; Gittemeier, Jury P.; Komyak, Nikolai I.; Levitin, Anatoly I.; Stolin, Valery I.; Frumkin, Semen P.; Vijunnik, Viktor S.; Leites, Anatoly B.; Lyakhov, Jury V.; Novikov, Vladlen V.; Patsiansky, Felix A.; Semyanov, Alexandr I.; and Yaroshevich, Nikolai M., 4,126,226, Cl. 209-589.000.

Paul Hauser - Chepharin, chemisch-pharmazeutische Industriegesellschaft in Klagenfurt: *See*—
Stuckler, Franz, 4,126,636, Cl. 562-472.000.

Paull, Edith R.: *See*—
Godfrey, William T.; and Paull, Edith R., 4,126,368, Cl. 339-91.00R.

Paulson, Mark G.: *See*—
Jaworski, Raymond A.; and Paulson, Mark G., 4,126,710, Cl. 426-589.000.

Paxson, Timm E.; and Wald, Milton M., to Shell Oil Company. Butadiene (1,3) conversion. 4,126,643, Cl. 260-673.000.

Payen, Pierre, to L. Payen & Cie. Method of manufacture of a rigid, perforated cloth. 4,126,499, Cl. 156-148.000.

Pearl, Jack: *See*—
Hinshaw, William Banks; and Pearl, Jack, 4,126,616, Cl. 546-75.000.

Pearlman, William M.: *See*—
Goel, Om P.; and Pearlman, William M., 4,126,637, Cl. 562-421.000.

Pedrazzi, Reinhard, to Fidelity Union Trust Company as Executive Trustee under the Sandoz Trust. Process for the production of salts of stilbene-azo and stilbene-azoxy dyes. 4,126,608, Cl. 260-143.000.

Peets, Robert S., to Singer Company, The. Folding sewing machine cabinet with storage compartment. 4,126,363, Cl. 312-21.000.

Pelcin, Albert L., to Eastern Company, The. Detent system for releasably retaining relatively movable members in predetermined positions. 4,126,340, Cl. 292-1.000.

Pelton, Edward L., to Ohio State University Research Foundation. Space filter surface. 4,126,866, Cl. 343-909.000.

Pendleton, Darrell D., to Garlock Inc. Bonded TFE seal with dual lip. 4,126,320, Cl. 277-152.000.

Penn, Robert E. Electric security door and unitized frame. 4,125,966, Cl. 49-378.000.

Penniman, Richard E.; and Hensel, John C., to Safeguard Products Corporation. Binder with magazine storage. 4,126,402, Cl. 402-53.000.

Pennwalt Corporation: *See*—
Bross, Charles F., 4,126,219, Cl. 198-382.000.
Reifenberg, Gerald H., 4,126,627, Cl. 260-399.000.
Toukan, Sameeh S.; and Hauptschein, Murray, 4,126,633, Cl. 260-501.120.

Perlman, Stuart S.: *See*—
McCusker, Joseph H.; and Perlman, Stuart S., 4,126,838, Cl. 333-72.000.

Perrine, Walter E. Bolt actuating mechanism useable with floating firing pin. 4,126,079, Cl. 89-190.000.

Persinger, C. Wilson: *See*—
Lewis, Mack A., 4,126,006, Cl. 405-220.000.

Peteretti, Raymond H., to Toneray Covers, Inc. Cover for an open body. 4,126,351, Cl. 296-100.000.

Peters, Alan W.: *See*—
Caesar, Philip D.; Garwood, William E.; Peters, Alan W.; and Wise, John J., 4,126,644, Cl. 260-676.00R.

Peters, Victor; and Krammer, Franz, to Alkor GmbH Kunststoffverkauf. Method of protecting plastic films against abrasion and lacquer for performing the method. 4,126,594, Cl. 260-29.4UA.

Petrie, Sarah E.: *See*—
Blazey, Richard N.; and Petrie, Sarah E., 4,126,385, Cl. 350-358.000.

Petrov, Boris M.: *See*—
Kim, Vladimir A.; Samokhvalov, Jury I.; Petrov, Boris M.; Golovkin, Engels K.; and Artamonova, Galina N., 4,126,507, Cl. 156-415.000.

Petrov, Jury V.: *See*—
Iogansen, Vadim I.; Kadi-Ogly, Ibragim A.; Petrov, Jury V.; Ptakul, Izrail A.; Chernyavsky, Vladimir P.; Shapiro, Aron B.; and Shkoda, Gennady V., 4,126,799, Cl. 310-260.000.

Pfaff Industriemaschinen GmbH: *See*—
Willenbacher, Erich, 4,126,097, Cl. 112-153.000.

Pfau, Irwin B.: *See*—
Gilbert, Russell T.; and Pfau, Irwin B., 4,126,291, Cl. 249-63.000.

Pfeffer, Victor: *See*—
Hafner, Gunther; and Pfeffer, Victor, 4,126,111, Cl. 123-122.00E.

Pfizer Inc.: *See*—
Armstrong, William W., 4,126,680, Cl. 424-80.000.
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,126,624, Cl. 260-345.90R.
Faubl, Hermann, 4,126,639, Cl. 260-559.0AT.

Pharmacia Aktiebolag: *See*—
Rothman, Ulf S. E.; and Lindberg, Bernt J., 4,126,669, Cl. 424-1.000.

Philagro S.A.: *See*—
Trinh, Stephane; Moraly, Alain; and Gaulliard, Jean-Michel, 4,126,678, Cl. 424-217.000.

Phillips, David L.; Moxness, Sherman U.; and Emery, Robert D., to Bepex Corporation. Foundry mixer system with gas assisted resin injection. 4,126,398, Cl. 366-76.000.

Phillips, Marjorie E. Training roll-on ball with balancing supports. 4,126,326, Cl. 280-205.000.

Phillips Petroleum Company: *See*—
Hughes, William B.; and Zuech, Ernest A., 4,126,577, Cl. 252-431.00N.

Stapp, Paul R., 4,126,751, Cl. 568-879.000.
Stapp, Paul R., 4,126,756, Cl. 568-879.000.
Phillips Petroleum Co., Inc.: *See—*
Middlebrook, Terence C., 4,126,662, Cl. 264-328.000.
Piccardi, Paolo; Massardo, Pietro; and Longoni, Angelo, to Montedison S.p.A. Benzyl or phenyl ethers and thioethers with a linear aliphatic chain having a halogenated end group and exhibiting juvenile hormone and acaricide activity. 4,126,623, Cl. 260-340.50R.
Pierson, Fred W., Jr.: *See—*
Pierson, Fred W., Sr.; Pierson, Fred W., Jr.; and Weidenfeller, Gordon J., 4,125,931, Cl. 29-455.00R.
Pierson, Fred W., Sr.; Pierson, Fred W., Jr.; and Weidenfeller, Gordon J., to M&T Mfg. Co. Method of supporting a core within a mold. 4,125,931, Cl. 29-455.00R.
Pires, Antonio: *See—*
Ihasz, Richard; and Pires, Antonio, 4,125,940, Cl. 30-220.000.
Pitman-Moore, Inc.: *See—*
House, James A.; and House, Carol, 4,126,671, Cl. 424-12.000.
Pitts, Frank, to Engelhard Minerals & Chemicals Corporation. Process for recovering vanadium values from acidic sulfate solution. 4,126,663, Cl. 423-63.000.
Plasmesco AG: *See—*
Schneider, Waldemar; and Wolter, Dietrich, 4,126,605, Cl. 260-112.00B.
Poe, Ronald L.; Scamehorn, John F.; and Schupbach, Cortlan R., to Continental Oil Company. Process for the high pressure methylation of 2,6-xylenol. 4,126,750, Cl. 568-804.000.
Polaroid Corporation: *See—*
Greenwald, Richard B., 4,126,459, Cl. 96-29.00R.
Nel, Pierre E., 4,126,465, Cl. 96-76.00C.
Wareham, Richard R., 4,126,875, Cl. 354-86.000.
Pole, Robert V.; Shattuck, Meredith D.; Sincerbox, Glenn T.; and Werlich, Harald W., to International Business Machines Corporation. Visual image recording device. 4,126,456, Cl. 96-1.00E.
Poliniak, Eugene S.; and Desai, Nitin V., to RCA Corporation. Method of transferring a surface relief pattern from a wet poly(olefin sulfone) layer to a metal layer. 4,126,712, Cl. 427-41.000.
Polygram GmbH: *See—*
Soeding, Horst, 4,126,726, Cl. 428-163.000.
Pont-a-Mousson S.A.: *See—*
Fulconis, Thierry; and Ginglinger, Bernard, 4,126,661, Cl. 264-209.000.
Poole, William H. Anti-theft device for tractor-trailer rig. 4,126,330, Cl. 280-474.000.
Population Research Incorporated: *See—*
Bolduc, Lee R.; and Dickhudt, Eugene A., 4,126,134, Cl. 128-235.000.
Popy Co., Ltd.: *See—*
Yamashina, Naoharu, 4,125,961, Cl. 46-145.000.
Porath, Douglas A.: *See—*
Balko, Edward N.; Argade, Shyam D.; Shrewsburg, James E.; and Porath, Douglas A., 4,126,536, Cl. 204-296.000.
Porter, Joe A.; and Dageforde, Allen P., to Uniloc, Inc. Sensor with annular pressure compensating means. 4,126,531, Cl. 204-195.00P.
Portner, Peer M.; and Jassawalla, Jal S., to Andros Incorporated. Intravenous and intra arterial delivery system. 4,126,132, Cl. 128-214.00F.
Post Office, The: *See—*
Hills, Eric G., 4,126,306, Cl. 271-94.000.
PPG Industries, Inc.: *See—*
Schimmel, Karl F.; Claar, James A.; Seiner, Jerome A.; and Wismer, Marco, 4,126,596, Cl. 260-29.6NR.
Prager, Melvin. Apparatus for drying clothes using solar energy. 4,125,946, Cl. 34-80.000.
Prajapati, Punamchand P.: *See—*
Burdick, Robert E.; and Prajapati, Punamchand P., 4,126,093, Cl. 104-159.000.
Pratt & Lambert, Inc.: *See—*
Wolinski, Leon E.; and Berezuk, Peter D., 4,126,504, Cl. 156-310.000.
Prestridge, Floyd L., to Combustion Engineering, Inc. Method and apparatus for separation of fluids with an electric field. 4,126,537, Cl. 204-302.000.
Procter & Gamble Company, The: *See—*
Goffinet, Pierre C. E.; and Leclercq, Jean-Pierre C. I. M., 4,126,562, Cl. 252-8.800.
Johnston, James P., 4,126,573, Cl. 252-99.000.
Reller, Herbert H., 4,126,681, Cl. 424-234.000.
Proctor & Associates Company: *See—*
Proctor, D. Frederic; and Cole, Darrell D., 4,126,771, Cl. 232-175.30R.
Proctor, D. Frederic; and Cole, Darrell D., to Proctor & Associates Company. Telephone line lifting apparatus. 4,126,771, Cl. 232-175.30R.
Produits Chimiques Ugine Kuhlmann: *See—*
Belfort, Gerard L. A., 4,126,610, Cl. 260-205.000.
Professional Packaging Limited: *See—*
Holmes, Gordon W., 4,126,265, Cl. 229-32.000.
Prost, Roger: *See—*
Bytniewski, Joseph; Chovet, Patrice; Gabillard, Jean-Pierre; and Prost, Roger, 4,126,017, Cl. 62-514.0JT.
Ptakul, Izrail A.: *See—*
Iogansen, Vadim I.; Kadi-Ogly, Ibragim A.; Petrov, Jury V.; Ptakul, Izrail A.; Chernyavsky, Vladimir P.; Shapiro, Aron B.; and Shkoda, Gennady V., 4,126,799, Cl. 310-260.000.
Puhak, Peter G., to GTE Sylvania Incorporated. CRT Pin alignment means. 4,126,371, Cl. 339-144.00T.
Pulli, Michael A.; and Bruno, James E. Novel golf tee. 4,126,438, Cl. 71-3.000.
Pupo, David A.; Ciurca, Samuel J., Jr.; Haist, Grant M.; and King, James R., to Eastman Kodak Company. Black-and-white photographic elements and processes. 4,126,461, Cl. 96-50.00R.
Pureric, Mario J. Stern fishing system. 4,125,955, Cl. 43-8.000.
Puro, John F., to Facet Enterprises, Inc. Sealed electromagnetic torque translating device. 4,126,215, Cl. 192-84.00C.
Purolator, Inc.: *See—*
Luceyk, Alfred R., 4,126,558, Cl. 210-429.000.
Quaglia, Giuseppe: *See—*
Ciaperoni, Aldemaro; Quaglia, Giuseppe; and Dall'Asta, Gino, 4,126,646, Cl. 260-860.000.
Quesnel, Henry R. Recoil reducing system for rifles, guns, cannons and the like. 4,126,077, Cl. 89-1.704.
R. R. Donnelley & Sons Company: *See—*
Hering, Henry H., Jr.; and Bender, Gerald J., 4,125,948, Cl. 34-160.000.
Raab, Andrew F., to Indak Manufacturing Corp. Combined electrical switch and fluid power control device. 4,126,153, Cl. 137-353.000.
Raabe, Gotthold, to Robert Bosch G.m.b.H. Double-acting piston. 4,126,319, Cl. 277-152.000.
Raasch, Hans: *See—*
Stahlecker, Fritz; Kamp, Heinz; and Raasch, Hans, 4,125,990, Cl. 57-263.000.
Radtke, Hans: *See—*
Gommel, Karl-Werner; Michl, Uwe; and Radtke, Hans, 4,126,376, Cl. 350-90.000.
Ragland, Douglas. Door jamb strike plate mounting assembly. 4,126,343, Cl. 292-341.000.
Rainbow, John R. Method and apparatus for relieving backaches and pains without the use of drugs. 4,126,129, Cl. 128-67.000.
Rainin, Kenneth, to Analtech, Inc. Selectively marked thin-layer chromatographic plate. 4,126,554, Cl. 210-198.00C.
Ramesohl, Hubert: *See—*
Herchenbach, Horst; Ramesohl, Hubert; Kuhs, Rudolf; and Schneider, Kurt, 4,126,471, Cl. 106-100.000.
Ramsey, William S.: *See—*
Messing, Ralph A.; and Ramsey, William S., 4,126,516, Cl. 195-103.50R.
Randall, Robert E., to Rowland Products, Incorporated. Method and apparatus for producing multicolor patterns and sheet material produced thereby. 4,126,724, Cl. 428-105.000.
Randall, Robert P., to EMI Limited. X-ray tubes. 4,126,805, Cl. 313-57.000.
Randolph, Julie K., to RCA Corporation. Automatic release mechanism for a tether. 4,126,850, Cl. 340-28.000.
Randolph, Robert W.: *See—*
Zimmerle, James R.; Randolph, Robert W.; and Rollins, Dallas W., 4,126,094, Cl. 105-377.000.
Rapata, George M.; and Ruehl, William E., to Illinois Tool Works. Electronic component terminal bridging assembly. 4,126,369, Cl. 339-113.00R.
Raud, Jean J. Process for driving a load, such as a vehicle, and motor unit for carrying out said process. 4,126,791, Cl. 290-11.000.
Rausing, Hans A., to Tetra Pak Developpement SA. Packing container. 4,126,238, Cl. 215-1.00C.
Rautiola, Norman A.: *See—*
Bull, David W.; and Rautiola, Norman A., 4,126,375, Cl. 350-58.000.
Ray, Ranjan: *See—*
Tanner, Lee E.; and Ray, Ranjan, 4,126,449, Cl. 75-164.000.
Raybestos-Manhattan, Inc.: *See—*
Orzechowski, John F., 4,126,541, Cl. 209-240.000.
Raychem Corporation: *See—*
Brooks, Philip L., 4,126,759, Cl. 174-94.00R.
Krumme, John F., 4,126,758, Cl. 174-52.0FP.
Raymond International Inc.: *See—*
Gendron, George J.; and Nelson Holland, Henry A., 4,126,191, Cl. 173-1.000.
Raytheon Company: *See—*
Wiener, Alan I., 4,126,858, Cl. 343-5.0EM.
Razdan, Raj K.; Dalzell, Haldean C.; and Pars, Harry G., to SISA Incorporated. Composition and method for treating glaucoma. 4,126,694, Cl. 424-283.000.
Razdan, Raj K.; Dalzell, Haldean C.; Terris, Barbara Z.; and Pars, Harry G., to SISA Incorporated. Anti-glaucoma composition and method. 4,126,695, Cl. 424-283.000.
RCA Corporation: *See—*
Ahmed, Adel A. A., 4,126,815, Cl. 315-384.000.
Bell, Alan E.; Williams, Brown F.; and Carlson, David E., 4,126,150, Cl. 136-89.0TF.
Carnes, James E.; and Dawson, Robert H., 4,126,836, Cl. 333-70.00T.
Fairbanks, David W., 4,126,121, Cl. 126-270.000.
Goodman, Lawrence A.; Hang, Kenneth W.; and Hall, William B., 4,126,384, Cl. 350-345.000.
Hanson, Richard E.; and Tetrev, Ronald E., 4,126,037, Cl. 73-116.000.
Kessler, Sebastian W., Jr.; and Olmstead, John A., 4,126,879, Cl. 357-82.000.
Marlowe, Frank J., 4,126,814, Cl. 315-307.000.
McCusker, Joseph H.; and Perlman, Stuart S., 4,126,838, Cl. 333-72.000.

Moscony, John J.; and Gadbois, George S., 4,126,510, Cl. 156-626.000.
Poliniak, Eugene S.; and Desai, Nitin V., 4,126,712, Cl. 427-41.000.
Randolph, Julie K., 4,126,850, Cl. 340-28.000.
Schade, Otto H., Jr., 4,126,830, Cl. 330-277.000.
Shanley, Robert L., II, 4,126,884, Cl. 358-21.000.
Willis, Donald H., 4,126,816, Cl. 315-411.000.

Reade, Richard F., to Corning Glass Works. Beta-spodumene glass-ceramics exhibiting excellent dimensional stability. 4,126,477, Cl. 106-39.700.

Real-Reel Corporation, The: *See—*
Dunn, Richard G., 4,126,286, Cl. 242-222.000.

Reali, Paolo: *See—*
Barzilai, Giorgio; Ottavi, Cesare M.; Maltese, Paolo; and Reali, Paolo, 4,126,382, Cl. 350-331.000.

Realsources, Inc.: *See—*
Lendrihas, George, 4,125,973, Cl. 52-91.000.

Rederiaktiebolaget Nordstjernan: *See—*
Hjelmner, Ulf R.; and Larsson, Hans F., 4,126,546, Cl. 210-19.000.

Rees, James D.: *See—*
Lenhard, Myron J.; and Rees, James D., 4,126,565, Cl. 252-62.10P.

Reese, Richard G., to Combustion Power Company, Inc. Apparatus for removing finely divided solids from gas. 4,126,435, Cl. 55-474.000.

Reifenberg, Gerald H., to Pennwalt Corporation. Process for preparing alkaline earth metal mercaptides. 4,126,627, Cl. 260-399.000.

Reighter, David H., to Gould Inc. Concrete electrical insulator. 4,126,598, Cl. 260-37.0EP.

Reilly, Frederick W., to Miranda Investments Limited. Connector for frame members. 4,126,364, Cl. 312-140.000.

Reinwald, Elmar; Schwuger, Milan J.; and Smolka, Heinz, to Henkel Kommanditgesellschaft auf Aktien; and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Surfactant-containing aluminosilicates and process. 4,126,574, Cl. 252-179.000.

Reiprich, Sieghard: *See—*
Bader, Dietrich; Berger, Engelbert; Ohnemuller, Dieter; and Reiprich, Sieghard, 4,126,803, Cl. 313-55.000.

Reitemeyer, Heinz-Otto: *See—*
Scholz, Bernhard; Obenaus, Fritz; Franz, Gerhard; Erberich, Hans-Jurgen; and Reitemeyer, Heinz-Otto, 4,126,748, Cl. 560-239.000.

Reitz, Ronald P., to Tom Swift Enterprises, Inc. Solar energy electrical conversion apparatus. 4,126,149, Cl. 136-89.0AA.

Reller, Herbert H., to Procter & Gamble Company, The. Topical composition containing acetyl salicylic acid. 4,126,681, Cl. 424-234.000.

Remport nee Radoczi, Julia: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog, Borbala; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,126,622, Cl. 260-340.300.

Repetti, Pierre: *See—*
Brisebarre, Marcel; and Repetti, Pierre, 4,126,147, Cl. 133-5.00R.

Research Corporation: *See—*
Auth, David C.; and Rushmer, Robert F., 4,126,136, Cl. 128-303.100.
Hagiwara, Hiroshi, 4,126,545, Cl. 210-14.000.

Research Institute for Iron, Steel and Other Metals of the Tohoku University, The: *See—*
Yajima, Seishi; Kayano, Hideo; and Toma, Hideo, 4,126,242, Cl. 220-83.000.

Retter, Eugene O.: *See—*
Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., 4,126,612, Cl. 260-239.00B.

Reuschel, Konrad: *See—*
Keller, Wolfgang; Kramer, Herbert; and Reuschel, Konrad, 4,126,509, Cl. 156-605.000.

Reymore, Harold E., Jr.: *See—*
Carleton, Peter S.; Ewen, James H., Jr.; and Reymore, Harold E., Jr., 4,126,741, Cl. 528-57.000.
Carleton, Peter S.; Ewen, James H., Jr.; and Reymore, Harold E., Jr., 4,126,742, Cl. 528-57.000.

Reynolds, George L., to United States of America, Army. High velocity anti-surge spring assembly. 4,126,080, Cl. 89-199.000.

Reynolds, Mark P.: *See—*
Babcock, Bryce W.; Reynolds, Mark P.; and Saluja, Kulbir, 4,126,216, Cl. 192-89.00B.

Rheem Manufacturing Company: *See—*
Conrad, William A., 4,126,034, Cl. 73-49.200.

Rhodes, William E., III: *See—*
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,126,700, Cl. 424-319.000.

Rich, Joseph A., to Electric Power Research Institute, Inc. High voltage two stage triggered vacuum gap. 4,126,808, Cl. 313-198.000.

Richards, Richard J.: *See—*
Varacins, Alan J.; Richards, Richard J.; and Ferro, Joseph A., 4,126,040, Cl. 73-293.000.

Richardson-Merrell Inc.: *See—*
Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., 4,126,611, Cl. 260-239.00B.
Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., 4,126,612, Cl. 260-239.00B.
Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., 4,126,613, Cl. 260-239.00B.
Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., 4,126,621, Cl. 260-329.0AM.

Richardson, Tom A.; Haggerty, William N.; and Krautz, Fred G., to Owens-Corning Fiberglas Corporation. Glass fibers sized with vinyl acetate copolymers. 4,126,729, Cl. 428-389.000.

Ricketts, Garland B.: *See—*
Hollister, Robert H.; Crockett, Jerry W.; Younger, Harold R., Jr.; and Ricketts, Garland B., 4,126,844, Cl. 336-198.000.

Ricoh Company, Ltd.: *See—*
Suzuki, Takami; Iwata, Nobuo; and Tsunasawa, Masami, 4,126,400, Cl. 400-144.200.

Rideau, Jacques: *See—*
Agouri, Elias; Laputte, Robert; and Rideau, Jacques, 4,126,648, Cl. 260-878.00R.

Riebel, Hans-Jochem: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,126,690, Cl. 424-273.00P.

Riedle, Rudolf: *See—*
Muller, Horst; Schmidt, Edgar; Frey, Volker; and Riedle, Rudolf, 4,126,630, Cl. 260-448.20E.

Rineer, Arthur E. Frictional planetary transmission. 4,126,060, Cl. 74-798.000.

Ringsholt, Thomas: *See—*
Hansen, Torben C.; and Ringsholt, Thomas, 4,126,475, Cl. 106-118.000.

Roberge, Raymond P., to Union Carbide Corporation. Packed bed temperature control. 4,126,430, Cl. 55-20.000.

Robert Bosch G.m.b.H.: *See—*
Raabe, Gotthold, 4,126,319, Cl. 277-152.000.

Roberts, Edward M.: *See—*
Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., 4,126,611, Cl. 260-239.00B.
Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., 4,126,612, Cl. 260-239.00B.
Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., 4,126,613, Cl. 260-239.00B.
Grisar, Johann M.; Blohm, Thomas R.; and Roberts, Edward M., 4,126,621, Cl. 260-329.0AM.

Roberts, Evelyn L.: *See—*
Vogl, Thomas M.; and Roberts, Evelyn L., 4,126,789, Cl. 250-505.000.

Robinson, Earl F.: *See—*
Bare, Rex O.; Robinson, Earl F.; and Smith, Kevin R., 4,126,126, Cl. 128-2.06E.

Robson, Ronald D.; and Saelens, Jeffrey K., to Ciba-Geigy Corporation. 4-Amino-3-p-halophenylbutyric acids and their derivatives used in the control of narcotic abuse. 4,126,684, Cl. 424-254.000.

Roccaforte, Harry I., to Champion International Corporation. Display carton and blank therefor. 4,126,220, Cl. 206-45.140.

Roccaforte, Harry I., to Champion International Corporation. Self erecting soap scoop and blank for same. 4,126,266, Cl. 229-39.00R.

Rockwell International Corporation: *See—*
Frerking, Marvin E., 4,126,853, Cl. 340-347.0DA.

Rode, John E., to Temper Corporation. Deformable metallic element. 4,125,929, Cl. 29-446.000.

Roelevink, Bauke J.: *See—*
Bok, Johannes G.; Roelevink, Bauke J.; and van Werkhoven, Jan, 4,126,409, Cl. 431-359.000.

Roest, Jan I. R., to Vredestein N.V. High-pressure filament reinforced hose having integral filament-bound couplings. 4,126,157, Cl. 138-109.000.

Rogers, Charles H., to Continental Oil Company. Polyvinyl chloride wire insulation made conductive at elevated temperatures by the use of additives. 4,126,568, Cl. 252-63.200.

Roggenburg, Stanley L., Jr.: *See—*
Laauwe, Robert H.; and Roggenburg, Stanley L., Jr., 4,126,224, Cl. 206-540.000.

Rohm and Haas Company: *See—*
Martorano, Richard; and Brendley, William H., 4,126,595, Cl. 260-29.4UA.

Rolair Systems, Inc.: *See—*
Burdick, Robert E.; and Prajapati, Punamchand P., 4,126,093, Cl. 104-159.000.

Rollins, Dallas W.: *See—*
Zimmerle, James R.; Randolph, Robert W.; and Rollins, Dallas W., 4,126,094, Cl. 105-377.000.

Romagnoli, Joseph: *See—*
Timmons, David R.; Romagnoli, Joseph; and Bryan, Charles, 4,126,024, Cl. 70-233.000.

Roos, Leo, to Du Pont de Nemours, E. I., and Company. Composite, mask-forming, photohardenable elements. 4,126,466, Cl. 96-84.0UV.

Ropp, Richard C., to Allied Chemical Corporation. Preparation of polymeric alkaline earth metaphosphate glasses. 4,126,665, Cl. 423-314.000.

Rosenbauer, Hans-Gunter: *See—*
Braun, Hans-Rudiger; Rosenbauer, Hans-Gunter; Coin, Andre; and Davril, Roland, 4,126,470, Cl. 106-95.000.

Rosenheck, Thierry. Chair with multi-positionable supporting elements. 4,126,355, Cl. 297-258.000.

Rosenthal, Alan S.; Fernau, Bernard R.; and Seifer, Stanley, to Decicom Systems, Inc. On the fly optical card reader. 4,126,780, Cl. 235-458.000.

Rosman, Irwin E. Rivet fastener system. 4,126,076, Cl. 85-37.000.

Ross, Joseph A.; and Stern, Howard K., to Solid Photography, Inc. Method for determining the spatial location of points on a specular surface. 4,126,395, Cl. 356-375.000.

Roth, Clarence E.: *See*—
Thompson, Kenneth P.; Ihde, Richard C.; and Roth, Clarence E., 4,126,262, Cl. 229-17.00G.
Rothman, Ulf S. E.; and Lindberg, Bernt J., to Pharmacia Aktiebolag. Diagnostic agent. 4,126,669, Cl. 424-1.000.
Rovnyak, Richard M.: *See*—
Calder, John A.; Rovnyak, Richard M.; and Lee, David Q., 4,126,765, Cl. 179-18.0AH.
Rowland Products, Incorporated: *See*—
Randall, Robert E., 4,126,724, Cl. 428-105.000.
Rozmus, John J. Composite strip for fabricating spring contacts. 4,125,936, Cl. 29-630.00C.
Rude, Harold E., to Minnesota Mining and Manufacturing Company. Coated abrasive containing isocyanurate binder and method of producing same. 4,126,428, Cl. 51-295.000.
Rudolph, Ralph G.: *See*—
Nilan, Thomas G.; and Rudolph, Ralph G., 4,126,036, Cl. 73-105.000.
Ruehl, William E.: *See*—
Rapata, George M.; and Ruehl, William E., 4,126,369, Cl. 339-113.00R.
Ruka, Armand J.: *See*—
Hansen, Kenneth N.; and Ruka, Armand J., 4,126,199, Cl. 180-54.00A.
Rupert, Samuel J.; and Ziegler, William E., to Hoover Ball and Bearing Company. Method of blow molding. 4,126,658, Cl. 264-89.000.
Rushmer, Robert F.: *See*—
Auth, David C.; and Rushmer, Robert F., 4,126,136, Cl. 128-303.100.
S&C Electric Company: *See*—
Bernatt, Joseph; and Vojta, Karel, 4,126,773, Cl. 200-146.00R.
Sadatomo, Hideo: *See*—
Shiomura, Tetsunosuke; Ooka, Tatuo; and Sadatomo, Hideo, 4,126,743, Cl. 528-503.000.
Sadwith, Howard M., to Industrial Washing Machine Corporation. Machine for cleaning pots and pans. 4,126,485, Cl. 134-46.000.
Saeki, Jun-Ichi; Kaneda, Aizo; and Otsuki, Keizo, to Hitachi, Ltd. Mold die. 4,126,292, Cl. 249-110.000.
Saelens, Jeffrey K.: *See*—
Robson, Ronald D.; and Saelens, Jeffrey K., 4,126,684, Cl. 424-254.000.
Safeguard Products Corporation: *See*—
Penniman, Richard E.; and Hensel, John C., 4,126,402, Cl. 402-53.000.
Sahakian, Albert D. Ski carrying case. 4,126,254, Cl. 224-45.00S.
Sakai, Takeo; and Ogawa, Tadashi, to Fuji Photo Film Co., Ltd. Process of making a lithographic photosensitive silver halide emulsion having reduced susceptibility to pressure containing an iridium compound, a hydroxytetrazaindene and a polyoxyethylene. 4,126,472, Cl. 96-110.000.
Sakamoto, Masakatsu: *See*—
Ogi, Kenji; and Sakamoto, Masakatsu, 4,126,204, Cl. 181-156.000.
Salee, Gideon, to Hooker Chemicals & Plastics Corp. Aromatic polyesters having improved properties. 4,126,602, Cl. 260-40.00R.
Salen & Wicander Terminalsystem AB: *See*—
Johansson, Anders, 4,126,332, Cl. 280-683.000.
Salters, Roelof H. W.: *See*—
Koomen, Joannes J. M.; Lohstroh, Jan; Salters, Roelof H. W.; and Van Zanten, Adrianus T., 4,126,900, Cl. 365-185.000.
Lohstroh, Jan; Koomen, Joannes J. M.; Salters, Roelof H. W.; and Hart, Cornelis M., 4,126,899, Cl. 365-182.000.
Saluja, Kulbir: *See*—
Babcock, Bryce W.; Reynolds, Mark P.; and Saluja, Kulbir, 4,126,216, Cl. 192-89.00B.
Samokhvalov, Jury I.: *See*—
Kim, Vladimir A.; Samokhvalov, Jury I.; Petrov, Boris M.; Golovkin, Engels K.; and Artamonova, Galina N., 4,126,507, Cl. 156-415.000.
Sampson, Ronald N.; and McCaskey, Harold O., to Westinghouse Electric Corp. Drag reducing wax. 4,126,481, Cl. 106-191.000.
Sanchez Sanchez, D. Francisco: *See*—
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Sanczuk, Stefan; and Hermans, Hubert K. F., to Janssen Pharmaceutica N.V. N-aryl-N-(1-alkyl-4-piperidinyl)-arylacetamides. 4,126,689, Cl. 424-267.000.
Sanders, James M.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,569, Cl. 252-89.00R.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,570, Cl. 252-89.00R.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,571, Cl. 252-108.000.
Sanders, Murray J. Modified neurotoxin derived from Naja genus snake venom. 4,126,676, Cl. 424-98.000.
Sandor, Sylvester R.: *See*—
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Sankyo Company Limited: *See*—
Nakao, Hideo; Yanagisawa, Hiroaki; Shimizu, Bunji; Kaneko, Masakatsu; Nagano, Mitsuo; and Sugawara, Shinichi, 4,126,745, Cl. 544-21.000.
Sannes, Keith N.: *See*—
Factor, Arnold; and Sannes, Keith N., 4,126,740, Cl. 528-29.000.
Sanpo Lock Co., Ltd.: *See*—
Miyamae, Yasuo, 4,126,025, Cl. 70-360.000.
Sanyo Denki Kabushiki Kaisha: *See*—
Kamata, Kazuo; and Yamamoto, Yasushi, 4,126,071, Cl. 84-1.030.
Sanyo Electric Co., Ltd.: *See*—
Takahara, Ichiro; and Hashimoto, Hiroyoshi, 4,126,886, Cl. 360-37.000.
Sarro, Manuel B.; and Kriefeldt, Richard D. Engine air starter. 4,126,113, Cl. 123-179.00F.
Sato, Akira: *See*—
Tamura, Junzo; and Kitayama, Seishi, 4,126,770, Cl. 179-170.200.
Sato, Hideaki: *See*—
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,126,492, Cl. 148-12.00E.
Sato, Kazuo: *See*—
Ueno, Teietsu; Sato, Kazuo; Sugawara, Kohji; Takamura, Shuji; Tanaka, Masami; Nomura, Yukihiko; and Tsujioka, Isao, 4,126,846, Cl. 338-184.000.
Sato, Shui: *See*—
Endo, Takaya; Sato, Shui; Kikuchi, Shoji; Kozima, Tamotsu; Usui, Tugumoto; Imamura, Hiroyuki; and Takabe, Koichi, 4,126,462, Cl. 96-56.500.
Saturday Knight Ltd.: *See*—
Faragher, Raymond F., Jr., 4,126,172, Cl. 160-126.000.
Saute, Robert E. Face mask. 4,126,142, Cl. 132-7.000.
Scamehorn, John F.: *See*—
Poe, Ronald L.; Scamehorn, John F.; and Schupbach, Cortlan R., 4,126,750, Cl. 568-804.000.
Schabowski, Albin J.: *See*—
Kielma, Ervin J.; and Schabowski, Albin J., 4,125,932, Cl. 29-568.000.
Schade, Otto H., Jr., to RCA Corporation. Low leakage gate protection circuit. 4,126,830, Cl. 330-277.000.
Schaper, Ulf-Armin: *See*—
Conrad, Jens; Schaper, Ulf-Armin; and Bruns, Klaus, 4,126,585, Cl. 252-522.000.
Schatz, Klaus W.: *See*—
Derr, Walter R., Jr.; Gallagher, Lawrence E.; Haddad, James H.; McGovern, Stephen J.; Schatz, Klaus W.; and Smith, Fritz A., 4,126,539, Cl. 208-108.000.
Scheffer, Terry J.: *See*—
Doriguzzi, Rino; Egloff, Markus; Kaufmann, Meinolph; and Scheffer, Terry J., 4,126,383, Cl. 350-338.000.
Schenck, Hans-Uwe: *See*—
Hoene, Richard; Bankowsky, Heinz-Hilmar; Hartmann, Eduard; Schenck, Hans-Uwe; and Boerzel, Paul, 4,126,739, Cl. 526-272.000.
Schenectady Chemicals, Inc.: *See*—
Walrath, George A.; and Keating, John T., 4,126,597, Cl. 260-33.20R.
Scherz, Hans R. Skate boot. 4,126,323, Cl. 280-11.120.
Schiffmacher, William M.; and Knutson, J. Eugene Harold, to United Recycle, Inc. Method and apparatus for reinking typing ribbon cartridges. 4,126,715, Cl. 427-141.000.
Schildge, Adam T., Jr. Parapet reinforcement system for buildings. 4,125,978, Cl. 52-223.00R.
Schimmel, Karl F.; Claar, James A.; Seiner, Jerome A.; and Wismer, Marco, to PPG Industries, Inc. Two package polymeric epoxy compositions having improved potlife. 4,126,596, Cl. 260-29.6NR.
Schlossberg, Howard R.; and Fetterman, Harold R., to United States of America, Air Force. Diffraction grating coupled optically pumped laser. 4,126,832, Cl. 331-94.50C.
Schlueter, Francis E., to Deere & Company. Cotton harvester. 4,125,988, Cl. 56-30.000.
Schluter, Wilhelm: *See*—
Bottner, Manfred; and Schluter, Wilhelm, 4,126,361, Cl. 308-174.000.
Schmidt, Edgar: *See*—
Muller, Horst; Schmidt, Edgar; Frey, Volker; and Riedle, Rudolf, 4,126,630, Cl. 260-448.20E.
Schmoch, Otto, to Kraftwerk Union Aktiengesellschaft. Protective device for a waste-gas channel of a gas turbine in a combined gas turbine-steam power plant. 4,125,996, Cl. 60-39.09R.
Schneider, Fritz W.; and Grgic, Ivica, to Elastogran Maschinenbau GmbH & Co. Method and apparatus for preparing multi-component plastic materials, particularly polyurethane, with solid material additives or at least one highly viscous component. 4,126,399, Cl. 366-159.000.
Schneider, Kurt: *See*—
Herchenbach, Horst; Ramesohl, Hubert; Kuhs, Rudolf; and Schneider, Kurt, 4,126,471, Cl. 106-100.000.
Schneider, Waldemar; and Wolter, Dietrich, to Plasmesco AG. Process of improving the compatibility of gamma globulins. 4,126,605, Cl. 260-112.00B.
Scholz, Bernhard; Obenaus, Fritz; Franz, Gerhard; Erberich, Hans-Jurgen; and Reitemeyer, Heinz-Otto, to Chemische Werke Huels, A.G.

Process for the production of carboxylic acid esters by catalytic oxidation of alcohols. 4,126,748, Cl. 560-239.000.

Schoolar, Richard B.; and Jensen, James D., to United States of America, Navy. Surface passivation of IV-VI semiconductors with As_2S_3. 4,126,732, Cl. 428-539.000.

Schreiber, William L.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,569, Cl. 252-89.00R.
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Schreiner, Lester D.; and Steilen, Ronald M., to Deere & Company. Rearfolding implement. 4,126,187, Cl. 172-311.000.

Schroder, Rolf: *See*—
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,126,690, Cl. 424-273.00P.

Schroeder, George A., to Johnson Products Co., Inc. Electrically heated comb for hair styling. 4,126,143, Cl. 132-11.00A.

Schultz, Edward D. Backstacking apparatus. 4,126,236, Cl. 214-10.000.

Schupbach, Cortlan R.: *See*—
Poe, Ronald L.; Scamehorn, John F.; and Schupbach, Cortlan R., 4,126,750, Cl. 568-804.000.

Schurmann, Werner, to Mettler Instrumente AG. Apparatus for dividing a liquid into precisely defined aliquots. 4,126,043, Cl. 73-424.000.

Schurter, Rolf: *See*—
Moser, Hans; and Schurter, Rolf, 4,126,440, Cl. 71-76.000.

Schuster, Hans-Dieter: *See*—
Abthoff, Jorg; Schuster, Hans-Dieter; and Kreeb, Reiner, 4,125,997, Cl. 60-289.000.

Schuster, Samuel R.: *See*—
Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, 4,126,035, Cl. 73-60.000.

Schwartz, Boris. Intracorporeal catheter improvement. 4,126,133, Cl. 128-214.400.

Schwartz, Judd L.: *See*—
Coiner, Marsha H.; Haylock, John C.; Newland, Julian H.; and Schwartz, Judd L., 4,126,415, Cl. 8-115.500.

Schwehr, Richard A.: *See*—
Higgins, Robert D.; and Schwehr, Richard A., 4,126,209, Cl. 187-1.00R.

Schweim, Walter C. G. All purpose flower stand. 4,125,965, Cl. 47-39.000.

Schwuger, Milan J.: *See*—
Reinwald, Elmar; Schwuger, Milan J.; and Smolka, Heinz, 4,126,574, Cl. 252-179.000.

Scientific Research Foundation, The: *See*—
Miller, Morris L.; and Locker, Daniel, 4,126,200, Cl. 180-66.00R.

Scoleri, Giuseppe. Machine for the crimping of yarns, in particular for producing false, wavy hairs for wigs. 4,125,923, Cl. 28-278.000.

Scondo, Christian: *See*—
Kunst, Helmut; and Scondo, Christian, 4,126,488, Cl. 148-6.000.

Scott, George W., to Textron Inc. Slide fastener stringer and method and apparatus for manufacture. 4,126,158, Cl. 139-384.00B.

Sears, Barry D., to Boston University, The Trustees of. Method for determining the level of LDL cholesterol in blood plasma. 4,126,416, Cl. 23-230.00B.

Sebag, Henri: *See*—
Vanlerberghe, Guy; and Sebag, Henri, 4,126,702, Cl. 424-365.000.

Seifer, Stanley: *See*—
Rosenthal, Alan S.; Fernau, Bernard R.; and Seifer, Stanley, 4,126,780, Cl. 235-458.000.

Seiner, Jerome A.: *See*—
Schimmel, Karl F.; Claar, James A.; Seiner, Jerome A.; and Wismer, Marco, 4,126,596, Cl. 260-29.6NR.

Seko, Maomi: *See*—
Hamada, Masato; Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; and Yamamoto, Fumihiko, 4,126,589, Cl. 521-31.000.

Self-Level Covers Aktiengesellschaft: *See*—
Ferns, Derek, 4,126,404, Cl. 404-4.000.

Selivanov, Mikhail Y.: *See*—
Lukyanchikov, Viktor E.; Baidalinov, Ilya V.; and Selivanov, Mikhail Y., 4,126,533, Cl. 204-224.00R.

Selvin, Gerald J., to International Telephone and Telegraph Corporation. Filter connector. 4,126,840, Cl. 333-79.000.

Semiconductor Research Foundation: *See*—
Nishizawa, Jun-ichi; and Kimura, Mitsuhiro, 4,126,731, Cl. 428-446.000.

Semyanov, Alexandr I.: *See*—
Bello, Mark B.; Gittemeier, Jury P.; Komyak, Nikolai I.; Levitin, Anatoly I.; Stolin, Valery I.; Frumkin, Semen P.; Vijunnik, Viktor S.; Leites, Anatoly B.; Lyakhov, Jury V.; Novikov, Vladlen V.; Patsiansky, Felix A.; Semyanov, Alexandr I.; and Yaroshevich, Nikolai M., 4,126,226, Cl. 209-589.000.

Senco Products, Inc.: *See*—
Martin, Charles R.; Kramer, Francis J.; and Warman, Thomas E., 4,126,258, Cl. 227-8.000.

Serrano, Francisco de Assis M.: *See*—
Lamy, Jacques E.; Michel, Dominique; and Serrano, Francisco de Assis M., 4,126,011, Cl. 405-196.000.
Michel, Dominique; and Serrano, Francisco de Assis M., 4,126,010, Cl. 405-202.000.

Seruga, Edward A.: *See*—
Coel, Joseph B.; Jablonski, Donald D.; and Seruga, Edward A., 4,126,338, Cl. 285-330.000.

Sethares, James C.; and Frost, Harold M., to United States of America, Air Force. Surface acoustic wave rate sensor and position indicator. 4,126,047, Cl. 73-505.000.

Shanley, Robert L., II, to RCA Corporation. Kinescope beam current limiter employing automatic sequential control of image contrast and brightness to limit beam current. 4,126,884, Cl. 358-21.000.

Shapiro, Aron B.: *See*—
Iogansen, Vadim I.; Kadi-Ogly, Ibragim A.; Petrov, Jury V.; Ptakul, Izrail A.; Chernyavsky, Vladimir P.; Shapiro, Aron B.; and Shkoda, Gennady V., 4,126,799, Cl. 310-260.000.

Sharp, James H.: *See*—
Lindblad, Nero R.; Johnson, Gordon E.; and Sharp, James H., 4,126,455, Cl. 96-1.0SD.

Shattuck, Meredith D.: *See*—
Pole, Robert V.; Shattuck, Meredith D.; Sincerbox, Glenn T.; and Werlich, Harald W., 4,126,456, Cl. 96-1.00E.

Shaw, Andrew, to Imperial Chemical Industries Limited. 6-Aryl-pyrrolo[1,2,9]imidazole derivatives which possess anti-hypertensive activity. 4,126,685, Cl. 424-258.000.

Sheetz, Charles E., to FMC Corporation. Bagging apparatus. 4,125,986, Cl. 53-75.000.

Shelby, Robert L.; and Nelson, Delbert G., to Caterpillar Tractor Co. Fluid flow divider. 4,126,058, Cl. 74-606.00R.

Shell Oil Company: *See*—
Denison, Early B., 4,126,848, Cl. 340-18.0LD.
Gergen, William P.; and Davison, Sol, 4,126,600, Cl. 260-42.180.
Goudriaan, Frans; and Van Klinken, Jakob, 4,126,538, Cl. 208-80.000.
Kim, Leo; and Wald, Milton M., 4,126,642, Cl. 260-673.000.
Paxson, Timm E.; and Wald, Milton M., 4,126,643, Cl. 260-673.000.
Verschuur, Eke, 4,126,426, Cl. 44-24.000.

Shell, William O.: *See*—
DeLong, David C.; and Shell, William O., 4,126,354, Cl. 297-248.000.

Shelley Manufacturing Company, Division of Alco Foodservice Equipment: *See*—
House, Bruce F., 4,126,248, Cl. 221-241.000.

Shemer, Jack E.: *See*—
Cronshaw, David; Turner, William D.; and Shemer, Jack E., 4,126,893, Cl. 364-200.000.
Cronshaw, David; Keddy, James R.; Shemer, Jack E.; and Turner, William D., 4,126,894, Cl. 364-200.000.

Shen, Kelvin K.; and Griffin, Thomas S., to United States Borax & Chemical Corp. O-Phosphoroamidophenylmorpholine compounds and use as herbicides. 4,126,442, Cl. 71-86.000.

Sheres, Alan. Record organizer. 4,126,229, Cl. 211-40.000.

Sheridon, Nicholas K., to Xerox Corporation. Twisting ball panel display. 4,126,854, Cl. 340-373.000.

Sherif, Fawzy G., to Stauffer Chemical Company. Sulfuric acid catalyst containing vanadium and process therefor. 4,126,578, Cl. 252-440.000.

Sheth, Prabhakar R.; and Tossounian, Jacques L., to Hoffmann-La Roche Inc. Sustained release pharmaceutical capsules. 4,126,672, Cl. 424-22.000.

Shiflet, Frank L., to Hopeman Brothers, Inc. High pressure laminates. 4,126,725, Cl. 428-110.000.

Shimada, Yoshiharu; Suzuki, Manao; and Hoshiya, Masaru, to Kyokado Engineering Co., Ltd. Method for constructing a soil structure. 4,126,001, Cl. 405-287.000.

Shimizu, Bunji: *See*—
Nakao, Hideo; Yanagisawa, Hiroaki; Shimizu, Bunji; Kaneko, Masakatsu; Nagano, Mitsuo; and Sugawara, Shinichi, 4,126,745, Cl. 544-21.000.

Shimogawa, Toshiaki: *See*—
Morita, Masayuki; Kawaharazaki, Takashi; and Shimogawa, Toshiaki, 4,126,282, Cl. 242-107.000.

Shimonaka, Tomoo, to Kabushiki Kaisha Akashi Seisakusho. Microtome. 4,126,069, Cl. 83-703.000.

Shinoda, Wataru: *See*—
Otera, Junzo; Makimoto, Tsutomu; Shinoda, Wataru; and Hattori, Norihisa, 4,126,567, Cl. 252-62.540.

Shintani, Akira: *See*—
Tamaki, Yoichi; Isomae, Seiichi; Ogirima, Masahiko; Shintani, Akira; and Maki, Michiyoshi, 4,126,880, Cl. 357-54.000.

Shiokawa, Showko; Kusakabe, Takaaki; Moriizumi, Toyosaka; and Yasuda, Tsutomu, to Toko, Inc. Surface elastic wave device using side lobes. 4,126,800, Cl. 310-313.000.

Shiomura, Tetsunosuke; Ooka, Tatuo; and Sadatomo, Hideo, to Mitsui Toatsu Chemicals, Incorporated. Method for continuous transfer of polymer slurries. 4,126,743, Cl. 528-503.000.

Shirato, Kozo: *See*—
Sumikama, Sadao; Nakamura, Shigeru; Shirato, Kozo; Hiraizumi, Kazuo; Takasu, Nobuo; Taguchi, Mitsuru; Yamada, Tsuyoshi; and Ishiguro, Susumu, 4,126,393, Cl. 356-130.000.

Shizuki, Tatsuhiko: *See—*
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Shkoda, Gennady V.: *See—*
Iogansen, Vadim I.; Kadi-Ogly, Ibragim A.; Petrov, Jury V.; Ptakul, Izrail A.; Chernyavsky, Vladimir P.; Shapiro, Aron B.; and Shkoda, Gennady V., 4,126,799, Cl. 310-260.000.

Shotts, L. D.: *See—*
Bobo, Melvin; Heyser, James W.; Shotts, L. D.; and Wisbey, Raymond W., 4,126,405, Cl. 415-115.000.

Showa Denko K. K: *See—*
Sumikama, Sadao; Nakamura, Shigeru; Shirato, Kozo; Hiraizumi, Kazuo; Takasu, Nobuo; Taguchi, Mitsuru; Yamada, Tsuyoshi; and Ishiguro, Susumu, 4,126,393, Cl. 356-130.000.

Shrewsburg, James E.: *See—*
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Balko, Edward N.; Argade, Shyam D.; Shrewsburg, James E.; and Porath, Douglas A., 4,126,536, Cl. 204-296.000.

Shuster, Edward J.: *See—*
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,126,140, Cl. 131-8.00R.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,569, Cl. 252-89.00R.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,570, Cl. 252-89.00R.
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Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; and Shuster, Edward J., 4,126,641, Cl. 260-586.00C.

Sibley, Murray J.; Yung, Gordon H. K.; and Urrea, Petronio D., to Barnes-Hind Pharmaceuticals, Inc. Cleaning agents for contact lenses. 4,126,587, Cl. 252-541.000.

Siegel, Melvin W., to Extranuclear Laboratories, Inc. Method and apparatus for producing electrostatic fields by surface currents on resistive materials with applications to charged particle optics and energy analysis. 4,126,781, Cl. 250-281.000.

Siemens Aktiengesellschaft: *See—*
Bromer, Gunter, 4,126,068, Cl. 83-237.000.
Keller, Wolfgang; Kramer, Herbert; and Reuschel, Konrad, 4,126,509, Cl. 156-605.000.
Kirner, Wilhelm, 4,126,868, Cl. 346-140.00R.
Martin, Heinz, 4,126,883, Cl. 357-82.000.
Soeder, Eickhardt, 4,126,784, Cl. 250-421.000.
von Basse, Paul-Werner; and Hofmann, Rudiger, 4,126,881, Cl. 357-55.000.
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Siemens Corporation: *See—*
Verderber, Rudolph R., 4,126,496, Cl. 148-187.000.

Sierra Engineering Co.: *See—*
Davis, Donald G.; Wippler, John; and Heitman, David L., 4,126,131, Cl. 128-142.400.

Signouret, Jean Baptiste; and Nicolau, Albert, to Societe Nationale des Petroles d'Aquitaine. Thiol polyesters. 4,126,482, Cl. 106-274.000.

Silonics, Inc.: *See—*
Stevenson, Richard G., Jr., 4,126,867, Cl. 346-140.00R.

Simcoe, Kent W.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,126,898, Cl. 364-900.000.

Simmler, Werner: *See—*
Diem, Hans; Dudeck, Christian; Simmler, Werner; Marquardt, Siegfried; and Stingl, Walter, 4,126,582, Cl. 252-476.000.

Simmons, Richard T., to Chrysler Corporation. Inlet air temperature control for an I.C. engine. 4,126,110, Cl. 123-122.00D.

Simonaire, Fred M., to United States of America, Air Force. Countermeasure for LORO radar. 4,126,862, Cl. 343-18.00E.

Simonidesz, Vilmos: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog, Borbala; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,126,622, Cl. 260-340.300.

Simpkins, Frederick W., to Alden Research Foundation. Chaff tray for facsimile recorder. 4,126,869, Cl. 346-165.000.

Sincerbox, Glenn T.: *See—*
Pole, Robert V.; Shattuck, Meredith D.; Sincerbox, Glenn T.; and Werlich, Harald W., 4,126,456, Cl. 96-1.00E.

Singer, Arnold J.: *See—*
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,126,700, Cl. 424-319.000.

Singer Company, The: *See—*
Coulombe, Lionel J., 4,126,098, Cl. 112-158.00B.
Peets, Robert S., 4,126,363, Cl. 312-21.000.

Sirco International Corporation: *See—*
Ganz, Joseph; and Siris, Burt J., 4,126,168, Cl. 150-35.000.

Siris, Burt J.: *See—*
Ganz, Joseph; and Siris, Burt J., 4,126,168, Cl. 150-35.000.

SISA Incorporated: *See—*
Razdan, Raj K.; Dalzell, Haldean C.; and Pars, Harry G., 4,126,694, Cl. 424-283.000.
Razdan, Raj K.; Dalzell, Haldean C.; Terris, Barbara Z.; and Pars, Harry G., 4,126,695, Cl. 424-283.000.

Skatsche, Othmar: *See—*
List, Hans; Greier, Josef; Obermayer, Bertram; Fachbach, Heinz; and Skatsche, Othmar, 4,126,115, Cl. 123-198.00E.

SKF Industrial Trading and Development Company B. V.: *See—*
Hamblin, Ronald F.; and Forknall, John P., 4,126,362, Cl. 308-201.000.

Skor, Dimitry V.; and Fogle, John L. Eccentric faucet insert. 4,126,296, Cl. 251-363.000.

Sloan, James L.; and Meeker, Greg W., to Cross River Products, Inc. Foldable stroller. 4,126,331, Cl. 280-650.000.

Smalands Industrirationalisering AB: *See—*
Marosan, Josef, 4,126,506, Cl. 156-396.000.

Small, Samuel N.: *See—*
Pappas, Dennis G.; Baum, Matthew C.; Small, Samuel N.; Adams, Robert T.; and Freedman, Robert P., 4,126,772, Cl. 200-61.250.

Smart, Bruce E.: *See—*
Krespan, Carl G.; and Smart, Bruce E., 4,126,631, Cl. 260-456.00F.

Smemo, Alfred S., to Deere & Company. Pressure boost system for a powershift transmission. 4,126,059, Cl. 74-730.000.

Smith, Andrew W., Jr.; and Kratz, Kenneth S., to Westinghouse Electric Corp. Method and apparatus for eccentricity correction in a rolling mill. 4,126,027, Cl. 72-11.0C0.

Smith, Charles W., Jr.; and Zimmerman, Franz X., to Autoclave Engineers, Inc. Multizone graphite heating element furnace. 4,126,757, Cl. 13-25.000.

Smith, Chester L.; and Everswick, David N., to United States of America, Army. Projectile strain damage indicating device. 4,126,039, Cl. 73-167.000.

Smith, Dexter W.; Arrol, William J.; and Brennan, Adrian C. Method of manufacturing silicon nitride products. 4,126,653, Cl. 264-63.000.

Smith, Fritz A.: *See—*
Derr, Walter R., Jr.; Gallagher, Lawrence E.; Haddad, James H.; McGovern, Stephen J.; Schatz, Klaus W.; and Smith, Fritz A., 4,126,539, Cl. 208-108.000.

Smith, Herman W., to Upjohn Company, The. cis-4,5-Didehydro-13,14-didehydro-11-deoxy-$PGF_{1\alpha}$ compounds. 4,126,753, Cl. 560-121.000.

Smith International, Inc.: *See—*
Dixon, Robert L.; and Neilson, William J., 4,126,195, Cl. 175-364.000.
Evans, Robert F., 4,126,194, Cl. 175-340.000.

Smith, J. Weston; and Gottwalt, David J., to Patient Care Products, Inc. Gastric tube drainage bag. 4,126,167, Cl. 150-8.000.

Smith, Kevin R.: *See—*
Bare, Rex O.; Robinson, Earl F.; and Smith, Kevin R., 4,126,126, Cl. 128-2.06E.

Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Parsons, Michael E., 4,126,670, Cl. 424-9.000.

Smith, Michael E.; and Brown, Robert G., to Watts Regulator Co. Tamperproof locking and latching mechanism for rotatable controls. 4,126,023, Cl. 70-177.000.

Smith, Robert L.; and Yann, Carl C., to Chemetron Corporation. Dual scraped surface heat exchanger. 4,126,177, Cl. 165-91.000.

SmithKline Corporation: *See—*
Berges, David A., 4,126,682, Cl. 424-246.000.

Smolka, Heinz: *See—*
Reinwald, Elmar; Schwuger, Milan J.; and Smolka, Heinz, 4,126,574, Cl. 252-179.000.

Smrt, Thomas J. Actuator and actuator-orientator assembly for aerosol spray cans. 4,126,273, Cl. 239-579.000.

SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Ciaperoni, Aldemaro; Quaglia, Giuseppe; and Dall'Asta, Gino, 4,126,646, Cl. 260-860.000.

Soble, Bernard D. Foundation on grade arrangement for manufactured structures and method of installation. 4,125,975, Cl. 52-126.000.

Sobolev, Igor; and Panusch, Erwin, to Kaiser Aluminum & Chemical Corporation. Flame retarding compositions for cellulosic boards. 4,126,473, Cl. 106-15.0FP.

Societe Auxiliaire d'Entreprises: *See—*
Braun, Hans-Rudiger; Rosenbauer, Hans-Gunter; Coin, Andre; and Davril, Roland, 4,126,470, Cl. 106-95.000.

Societe Chimique des Charbonnages - CdF Chimie: *See—*
Decroix, Jean-Claude, 4,126,649, Cl. 260-897.00B.

Societe Francaise des Produits pour Catalyse: *See—*
Sugier, Andre; Courty, Philippe; and Freund, Edouard, 4,126,581, Cl. 252-463.000.

Societe Nationale des Petroles d'Aquitaine: *See—*
Signouret, Jean Baptiste; and Nicolau, Albert, 4,126,482, Cl. 106-274.000.

Societe Nationale et de Construction de Moteurs d'Aviation: *See—*
Barou, Ernest J.; Beyler, Roland; Buisson, Marc F. B.; Caruel, Jacques E. J.; and Vandenbroucke, Roger A. J., 4,125,998, Cl. 60-261.000.

Soeder, Eickhardt, to Siemens Aktiengesellschaft. X-ray diagnostics generator comprising a directly heated x-ray tube. 4,126,784, Cl. 250-421.000.

Soeding, Horst, to Polygram GmbH. Disc-shaped information carrier

having information in the form of a beam-reflecting structure and a process for producing the same. 4,126,726, Cl. 428-163.000.

Sohval, A. Robert: *See—*
Lanza, Richard C.; and Sohval, A. Robert, 4,126,783, Cl. 250-336.000.

Solid Photography, Inc.: *See—*
Ross, Joseph A.; and Stern, Howard K., 4,126,395, Cl. 356-375.000.

Solomon, Donald F., to JO-Line Tools, Inc. Torque wrench. 4,126,062, Cl. 81-52.40R.

Solomon, Elias E. Strobed smoke detector. 4,126,790, Cl. 250-564.000.

Solvay & Cie.: *See—*
Lempkowicz, Axel; Nanoux, Jean; and Bequet, Jean-Francois, 4,126,660, Cl. 264-101.000.

Somfai, Eva: *See—*
Turcsan, Istvan; Jelinek, Istvan; Ugrics, Jozsef; Csik, Istvan; Somfai, Eva; and Csaszar nee Toth, Iren, 4,126,615, Cl. 542-449.000.

Sony Corporation: *See—*
Murata, Yukishige, 4,126,885, Cl. 360-2.000.
Suzuki, Tadao; and Wachi, Shigeaki, 4,126,891, Cl. 363-26.000.
Yamanoi, Hiroshi; and Kitamura, Tomosaburo, 4,126,839, Cl. 333-72.000.

Sorapec Societe de Recherches et d'Application Electronchimiques: *See—*
Doniat, Denis, 4,126,733, Cl. 429-12.000.

Sorenson, Billy L., to Bandag Incorporated. Tire shoulder trimming device. 4,126,171, Cl. 157-13.000.

Southern California Edison Company: *See—*
DeBerry, David W., 4,126,529, Cl. 204-180.00P.

Southwest Research Institute: *See—*
Witzky, Julius E., 4,126,106, Cl. 123-30.00D.

Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., to Hewlett-Packard Company. Programmable calculator including terminal control means. 4,126,898, Cl. 364-900.000.

Spector, George: *See—*
Esposito, Philip; and Spector, George, 4,125,944, Cl. 33-347.000.

Spencer, Bette M.: *See—*
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,126,140, Cl. 131-8.00R.
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; and Shuster, Edward J., 4,126,641, Cl. 260-586.00C.

Sperry Rand Corporation: *See—*
Ihasz, Richard; and Pires, Antonio, 4,125,940, Cl. 30-220.000.

Sprecker, Mark A.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,569, Cl. 252-89.00R.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,570, Cl. 252-89.00R.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,571, Cl. 252-108.000.

Spruill, Robert E. Winding reel. 4,126,285, Cl. 242-222.000.

Stadiums Unlimited, Inc.: *See—*
DeLong, David C.; and Shell, William O., 4,126,354, Cl. 297-248.000.

Stadler, Istvan: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog, Borbala; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,126,622, Cl. 260-340.300.

Stahlecker, Fritz; and Stahlecker, Hans. Method and apparatus for treatment of pieced places in a yarn. 4,125,989, Cl. 57-263.000.

Stahlecker, Fritz; Kamp, Heinz; and Raasch, Hans, to Stahlecker, Fritz; Stahlecker, Hans; and W. Schlafhorst & Co. Open-end spinning machine. 4,125,990, Cl. 57-263.000.

Stahlecker, Fritz, to Stahlecker, Hans; and Stahlecker, Fritz. Mobile servicing device for an open end spinning frame. 4,125,991, Cl. 57-302.000.

Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Stahlecker, Hans, 4,125,989, Cl. 57-263.000.
Stahlecker, Fritz; Kamp, Heinz; and Raasch, Hans, 4,125,990, Cl. 57-263.000.
Stahlecker, Fritz, 4,125,991, Cl. 57-302.000.

Stanadyne, Inc.: *See—*
Hodgkins, David H., 4,126,557, Cl. 210-249.000.

Standard Brands Incorporated: *See—*
Jaworski, Raymond A.; and Paulson, Mark G., 4,126,710, Cl. 426-589.000.

Standard Oil Company (Indiana): *See—*
Dixon, David A., 4,126,008, Cl. 405-207.000.

Stapp, Paul R., to Phillips Petroleum Company. Alkenol production. 4,126,751, Cl. 568-879.000.

Stapp, Paul R., to Phillips Petroleum Company. Alkenol production. 4,126,756, Cl. 568-879.000.

Stauffer Chemical Company: *See—*
Sherif, Fawzy G., 4,126,578, Cl. 252-440.000.
Via, Francis A.; and Liu, Sophia Y., 4,126,650, Cl. 260-980.000.

Steel Engineering Company Limited, The: *See—*
Wallace, Trevor E., 4,126,192, Cl. 173-105.000.

Steelcase Inc.: *See—*
Tyson, George F.; Keeler, Robert A.; and Myers, Raymond L., 4,126,230, Cl. 211-50.000.

Steele, Gerald G.: *See—*
Clark, Charles R.; Clark, Richard J.; and Steele, Gerald G., 4,126,162, Cl. 141-98.000.

Steilen, Ronald M.: *See—*
Schreiner, Lester D.; and Steilen, Ronald M., 4,126,187, Cl. 172-311.000.

Steiner, Irving. Optical framing device for photographic cameras. 4,126,878, Cl. 354-296.000.

Stekoll, Marion H. Encapsulated fertilizer. 4,126,439, Cl. 71-16.000.

Stemler, Orrin A.: *See—*
Haak, Willard J.; Marsden, Howard A.; and Stemler, Orrin A., 4,126,083, Cl. 91-176.000.

Stendel, Wilhelm: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,126,690, Cl. 424-273.00P.

Stephen, Donald W.: *See—*
Klotz, Robert J.; and Stephen, Donald W., 4,126,515, Cl. 176-87.000.

Sterling Drug Inc.: *See—*
Bell, Malcolm R.; and Oesterlin, Rudolf, 4,126,620, Cl. 260-326.250.

Sterling, Raymond L. Tire inflation device. 4,126,161, Cl. 141-95.000.

Stern, Howard K.: *See—*
Ross, Joseph A.; and Stern, Howard K., 4,126,395, Cl. 356-375.000.

Stevens, W. Gene, to Caterpillar Tractor Co. Transmission arrangement. 4,126,201, Cl. 180-70.00R.

Stevenson, Richard G., Jr., to Silonics, Inc. Ink jet printer driving circuit. 4,126,867, Cl. 346-140.00R.

Stevenson, William F. Portable ballet bar with adjustable bracing means. 4,126,307, Cl. 272-62.000.

Stierlen-Maquet AG: *See—*
Junginger, Klaus M.; and Jung, Hans-Ulrich, 4,125,907, Cl. 5-81.00B.

Stingl, Walter: *See—*
Diem, Hans; Dudeck, Christian; Simmler, Werner; Marquardt, Siegfried; and Stingl, Walter, 4,126,582, Cl. 252-476.000.

Stobbe, Richard E.; and Cesarz, Michael R., to Kearney & Trecker Corporation. Interlock circuit for complementary electronic switches. 4,126,819, Cl. 318-810.000.

Stolin, Valery I.: *See—*
Bello, Mark B.; Gittemeier, Jury P.; Komyak, Nikolai I.; Levitin, Anatoly I.; Stolin, Valery I.; Frumkin, Semen P.; Vijunnik, Viktor S.; Leites, Anatoly B.; Lyakhov, Jury V.; Novikov, Vladlen V.; Patsiansky, Felix A.; Semyanov, Alexandr I.; and Yaroshevich, Nikolai M., 4,126,226, Cl. 209-589.000.

Stoll, Max: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, 4,126,618, Cl. 546-339.000.

Stopp, Fritz: *See—*
Lindner, Heinz; Georgi, Wolfgang; Muller, Lisbet; Stopp, Fritz; and Oehm, Werner, 4,126,019, Cl. 66-84.00R.

Stork Amsterdam B.V.: *See—*
Thieme, Willem L.; and Witte, Johan F., 4,126,088, Cl. 100-45.000.

Stoyshin, Donald A. Combination sudser and rinser brush. 4,126,401, Cl. 401-42.000.

Stuckler, Franz, to Paul Hauser - Chepharin, chemisch-pharmazeutische Industriegesellschaft in Klagenfurt. Process of producing the magnesium salt of p-chlorophenoxyisobutyric acid. 4,126,636, Cl. 562-472.000.

Subwick, Norbert A., to Borys, Chester E. Calking gun pressure release mechanism. 4,126,251, Cl. 222-326.000.

Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft: *See—*
Braun, Hans-Rudiger; Rosenbauer, Hans-Gunter; Coin, Andre; and Davril, Roland, 4,126,470, Cl. 106-95.000.
Weiss, Stefan, 4,126,664, Cl. 423-265.000.

Sugahara, Yujiro; Naito, Hiroyuki; Okubo, Tokio; and Omori, Nobuo, to Mizusawa Kagaku Kogyo Kabushiki Kaisha; and Mitsubishi Corporation. Water-resistant shaped structure of gypsum and process for production thereof. 4,126,599, Cl. 260-42.130.

Sugawara, Kohji: *See—*
Ueno, Teietsu; Sato, Kazuo; Sugawara, Kohji; Takamura, Shuji; Tanaka, Masami; Nomura, Yukihiko; and Tsujioka, Isao, 4,126,846, Cl. 338-184.000.

Sugawara, Shinichi: *See—*
Nakao, Hideo; Yanagisawa, Hiroaki; Shimizu, Bunji; Kaneko, Masakatsu; Nagano, Mitsuo; and Sugawara, Shinichi, 4,126,745, Cl. 544-21.000.

Sugden, Robert F.: *See—*
White, Alan C.; and Sugden, Robert F., 4,126,683, Cl. 424-251.000.

Sugier, Andre; Courty, Philippe; and Freund, Edouard, to Societe Francaise des Produits pour Catalyse. Catalyst containing copper oxide and zinc oxide, its manufacture and its use for the conversion of carbon monoxide. 4,126,581, Cl. 252-463.000.

Sugino, Masahiro: *See—*
Oohara, Kunio; Shizuki, Tatsuhiko; Mitamura, Hideyuki; and Sugino, Masahiro, 4,126,652, Cl. 264-29.600.

Sullivan, William B.; Tresidder, James M., Jr.; and Molnar, Gabor V., to GTE Sylvania Incorporated. Wire detector. 4,126,860, Cl. 343-5.0NA.

Sumikama, Sadao; Nakamura, Shigeru; Shirato, Kozo; Hiraizumi,

Kazuo; Takasu, Nobuo; Taguchi, Mitsuru; Yamada, Tsuyoshi; and Ishiguro, Susumu, to Showa Denko K. K; and Erma Optical Works, Ltd. High-sensitivity differential refractometer. 4,126,393, Cl. 356-130.000.

Summerhayes, Harry R.: *See—*
Houston, John M.; and Summerhayes, Harry R., 4,126,825, Cl. 324-96.000.

Sunset Ladder Company: *See—*
Becnel, Bradly M., 4,126,206, Cl. 182-129.000.

Sutton, James A.: *See—*
Walker, John H.; and Sutton, James A., 4,126,002, Cl. 405-296.000.

Suwa, Hiroyuki: *See—*
Okunishi, Hiromu; Nakaji, Hideki; Suwa, Hiroyuki; and Sato, Hideaki, 4,126,492, Cl. 148-12.00E.

Suzuki, Manao: *See—*
Shimada, Yoshiharu; Suzuki, Manao; and Hoshiya, Masaru, 4,126,001, Cl. 405-287.000.

Suzuki, Ryoichi; Uchidoi, Masanori; Mashimo, Yukio; Taguchi, Tetsuya; Ono, Yusuke; and Aizawa, Hiroshi, to Canon Kabushiki Kaisha. Power supply circuit for camera. 4,126,874, Cl. 354-60.00R.

Suzuki, Shigeto, to Chevron Research Company. Oxacaprolactams. 4,126,614, Cl. 260-239.30R.

Suzuki, Tadao; and Wachi, Shigeaki, to Sony Corporation. Switching regulator with feedback system for regulating output current. 4,126,891, Cl. 363-26.000.

Suzuki, Takami; Iwata, Nobuo; and Tsunasawa, Masami, to Ricoh Company, Ltd. Serial printing apparatus. 4,126,400, Cl. 400-144.200.

Suzuki, Toshiyuki: *See—*
Nakagawa, Taizo; Suzuki, Toshiyuki; Watanabe, Yutaka; Ohmori, Kaoru; Tejima, Iwao; Yamada, Osamu; and Ishida, Shuichi, 4,126,696, Cl. 424-300.000.

Svensson, Lars-Erik: *See—*
Tengzelius, Jan R.; and Svensson, Lars-Erik, 4,126,452, Cl. 75-251.000.

Swanson, Clare E.; and Kelly, Michael G., to Conwed Corporation. Apparatus for removal of an immiscible liquid from a liquid mixture. 4,126,556, Cl. 210-242.0AS.

Swanson, Elmer G.: *See—*
Hyland, William C.; and Swanson, Elmer G., 4,126,225, Cl. 206-607.000.

Sweeney, Lawrence J.; and MacDonald, Glenn E., to Franklin Steel Company. Post construction. 4,126,403, Cl. 403-2.000.

Sylvan, Richard: *See—*
Handler, Milton E.; and Sylvan, Richard, 4,126,366, Cl. 312-252.000.

Systems and Technics S.A.: *See—*
Brisebarre, Marcel; and Repetti, Pierre, 4,126,147, Cl. 133-5.00R.

Szantay, Csaba: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog, Borbala; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,126,622, Cl. 260-340.300.

Szekely, Istvan: *See—*
Tomoskozi, Istvan; Kovacs, Gabor; Szekely, Istvan; Simonidesz, Vilmos; Lovasz nee Gaspar, Marianna; Keresztes nee Ordog, Borbala; Remport nee Radoczi, Julia; Stadler, Istvan; Visky nee Gombos, Zsuzsa; and Szantay, Csaba, 4,126,622, Cl. 260-340.300.

Taber, Russell E. Rack and golf cart. 4,126,327, Cl. 280-47.260.

Taguchi, Mitsuru: *See—*
Sumikama, Sadao; Nakamura, Shigeru; Shirato, Kozo; Hiraizumi, Kazuo; Takasu, Nobuo; Taguchi, Mitsuru; Yamada, Tsuyoshi; and Ishiguro, Susumu, 4,126,393, Cl. 356-130.000.

Taguchi, Tetsuya: *See—*
Suzuki, Ryoichi; Uchidoi, Masanori; Mashimo, Yukio; Taguchi, Tetsuya; Ono, Yusuke; and Aizawa, Hiroshi, 4,126,874, Cl. 354-60.00R.
Yazaki, Mutsunobu; Uchiyama, Takashi; Matsuda, Mutsuhide; Taguchi, Tetsuya; and Mashimo, Yukio, 4,126,872, Cl. 354-33.000.

Tai, Ho Tan, to Lever Brothers Company. Built liquid detergent composition. 4,126,572, Cl. 252-89.00R.

Takabayashi, Youjiro, to Nippon Gakki Seizo Kabushiki Kaisha. Electric guitar. 4,126,073, Cl. 84-293.000.

Takabe, Koichi: *See—*
Endo, Takaya; Sato, Shui; Kikuchi, Shoji; Kozima, Tamotsu; Usui, Tugumoto; Imamura, Hiroyuki; and Takabe, Koichi, 4,126,462, Cl. 96-56.500.

Takada, Juichiro, to Takata Kojyo Co., Ltd. Seat belt webbing construction. 4,126,356, Cl. 297-386.000.

Takahara, Ichiro; and Hashimoto, Hiroyoshi, to Sanyo Electric Co., Ltd. Jitter correcting system using a pseudo composite video signal for use in a video reproduction apparatus. 4,126,886, Cl. 360-37.000.

Takahashi, Haruo. Electric device for thermally stimulating autonomic nervous system. 4,126,128, Cl. 128-24.300.

Takahashi, Hiroshi. Resin composition of improved flame retardancy and moldability. 4,126,593, Cl. 260-23.00R.

Takamura, Shuji: *See—*
Ueno, Teietsu; Sato, Kazuo; Sugawara, Kohji; Takamura, Shuji; Tanaka, Masami; Nomura, Yukihiko; and Tsujioka, Isao, 4,126,846, Cl. 338-184.000.

Takao, Hiroshi; and Matoba, Kazuo, to Nissan Motor Company, Limited. Oxygen sensor. 4,126,532, Cl. 204-195.00S.

Takasu, Nobuo: *See—*
Sumikama, Sadao; Nakamura, Shigeru; Shirato, Kozo; Hiraizumi, Kazuo; Takasu, Nobuo; Taguchi, Mitsuru; Yamada, Tsuyoshi; and Ishiguro, Susumu, 4,126,393, Cl. 356-130.000.

Takata Kojyo Co., Ltd.: *See—*
Takada, Juichiro, 4,126,356, Cl. 297-386.000.

Takenaka, Shinji: *See—*
Yamamoto, Kousuke; and Takenaka, Shinji, 4,126,716, Cl. 427-215.000.

Takeuchi, Tomio: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; and Hamada, Masa, 4,126,606, Cl. 260-112.50R.

Talley, Raymond W.; Henrichsen, Ray A.; and Bakker, Wate T., to General Refractories Company. Refractory for aluminum-melting furnaces. 4,126,474, Cl. 106-63.000.

Tamaki, Kentaro; Naito, Naoki; Nishimura, Fumio; Fujii, Kyoichi; and Nakamura, Nobuo, to Kyowa Hakko Kogyo Kabushiki Kaisha. Analgesic 3-(3-methyl-3-butenyl)-1,2,3,4,5,6-hexahydro-6,11-dimethyl-8-hydroxy-2,6-methano-3-benzazocine. 4,126,686, Cl. 424-267.000.

Tamaki, Yoichi; Isomae, Seiichi; Ogirima, Masahiko; Shintani, Akira; and Maki, Michiyoshi, to Hitachi, Ltd. Germanium-containing silicon nitride film. 4,126,880, Cl. 357-54.000.

Tamura, Junzo; and Kitayama, Seishi, to Sato, Akira; and Kokusai Denshin Denwa Kabushiki Kaisha. Echo canceller. 4,126,770, Cl. 179-170.200.

Tamura, Shuichi; Hosoe, Kazuya; and Yokota, Hideo, to Canon Kabushiki Kaisha. Focusing system in a camera. 4,126,871, Cl. 354-25.000.

Tamura, Toru: *See—*
Inada, Masami; and Tamura, Toru, 4,126,084, Cl. 91-443.000.

Tanaka, Masami: *See—*
Ueno, Teietsu; Sato, Kazuo; Sugawara, Kohji; Takamura, Shuji; Tanaka, Masami; Nomura, Yukihiko; and Tsujioka, Isao, 4,126,846, Cl. 338-184.000.

Tanner, Lee E.; and Ray, Ranjan, to Allied Chemical Corporation. Zirconium-titanium alloys containing transition metal elements. 4,126,449, Cl. 75-164.000.

Tarrant, Brian D., to Formflo Limited. Preparation of annular blanks from tube stock. 4,126,064, Cl. 82-1.00C.

Taylor, Gregg W., to A.H.P., Inc. Process of sparing poultry from the effect of toxins. 4,126,701, Cl. 424-329.000.

Taylor, Robert A. Stringed musical instrument. 4,126,072, Cl. 84-173.000.

Taylor, William W. Hybrid stepping motor unit. 4,126,818, Cl. 318-46.000.

Tchernyak, Shimon S. Wheeled vehicle with oar-type propulsion. 4,126,329, Cl. 280-220.000.

Technic, Inc.: *See—*
Hradil, Edward; Hradil, Hana; and Weisberg, Alfred M., 4,126,524, Cl. 204-44.000.

Techniservice Division, Textured Yarn Co. Inc.: *See—*
Irwin, Malcolm P., 4,125,922, Cl. 28-221.000.

Tejima, Iwao: *See—*
Nakagawa, Taizo; Suzuki, Toshiyuki; Watanabe, Yutaka; Ohmori, Kaoru; Tejima, Iwao; Yamada, Osamu; and Ishida, Shuichi, 4,126,696, Cl. 424-300.000.

Teledyne Industries, Inc.: *See—*
Erdley, Harold F., 4,126,046, Cl. 73-504.000.

Telefonaktiebolaget L M Ericsson: *See—*
Edlund, Per-Olof G., 4,126,522, Cl. 204-28.000.

Telic Corporation: *See—*
Thornton, John A., 4,126,530, Cl. 204-192.0EC.

Temper Corporation: *See—*
Rode, John E., 4,125,929, Cl. 29-446.000.

Tengzelius, Jan R.; and Svensson, Lars-Erik, to Hoganas AB Fack. Phosphorus containing steel powder and a method of manufacturing the same. 4,126,452, Cl. 75-251.000.

Teramoto, Yoshihiko: *See—*
Ikeda, Mitsuru; Ikeda, Teppei; Teramoto, Yoshihiko; Yasutake, Masatoshi; and Nakamine, Yoshimi, 4,126,032, Cl. 73-15.00B.

Terris, Barbara Z.: *See—*
Razdan, Raj K.; Dalzell, Haldean C.; Terris, Barbara Z.; and Pars, Harry G., 4,126,695, Cl. 424-283.000.

Tershak, Andrew T., to Eltra Corporation. Breakerless electronic ignition system. 4,126,112, Cl. 123-148.00E.

Tetra Pak Developpement SA: *See—*
Rausing, Hans A., 4,126,238, Cl. 215-1.00C.

Tetra Pak International AB: *See—*
Martensson, Kjell H., 4,126,263, Cl. 229-17.00R.

Tetra Werke, Dr. rer. nat. Ulrich Baensch G.m.b.H.: *See—*
Baensch, Ulrich; and Benedetto-Castro, Luis-Alberto, 4,126,544, Cl. 210-11.000.

Tetrev, Ronald E.: *See—*
Hanson, Richard E.; and Tetrev, Ronald E., 4,126,037, Cl. 73-116.000.

Texaco Inc.: *See—*
Allen, Joseph C.; and Chien, Sze-Foo, 4,126,182, Cl. 166-314.000.

Texas Instruments Incorporated: *See—*
Carson, Kent R.; and Hess, Charles M., 4,126,882, Cl. 357-74.000.
Cochran, Michael J., 4,126,831, Cl. 331-8.000.
Keough, Laurence J.; and Butts, Bruce D., 4,125,934, Cl. 29-622.000.
Wakefield, Gene F., 4,126,812, Cl. 313-500.000.

Textron Inc.: *See—*
Moertel, George B., 4,125,911, Cl. 5-347.000.
Scott, George W., 4,126,158, Cl. 139-384.00B.

Theiling, Louis F., Jr.: *See—*
Cowherd, Frank G., III; and Theiling, Louis F., Jr., 4,126,747, Cl. 520-166.000.

Theuerkauff, Ernst. Shutter arrangement. 4,126,173, Cl. 160-229.00R.

Thexton Manufacturing Company: *See*—
Clark, Robert E., 4,125,938, Cl. 29-764.000.
Tichy, Brian N.; and Clark, Robert E., 4,126,044, Cl. 73-440.000.
Thieme, Willem L.; and Witte, Johan F., to Stork Amsterdam B.V. Apparatus for pressing liquids, such as oil and the like from liquid containing material. 4,126,088, Cl. 100-45.000.
Thil, Lucien; Fischer, Martin; and Kindscher, Wolfgang, to BASF Aktiengesellschaft. Aminosulfonylcarboxylic acids and their salts. 4,126,634, Cl. 562-507.000.
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Otera, Junzo; Makimoto, Tsutomu; Shinoda, Wataru; and Hattori, Norihisa, 4,126,567, Cl. 252-62.540.
Toho Titanium Company, Limited: *See*—
Inoue, Masuo, 4,126,576, Cl. 252-429.00B.
Tohoku Metal Industries Limited: *See*—
Nishizawa, Jun-ichi; and Kimura, Mitsuhiro, 4,126,731, Cl. 428-446.000.
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Kamata, Kazuo; and Yamamoto, Yasushi, 4,126,071, Cl. 84-1.030.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Yamazaki, Isamu, 4,126,896, Cl. 364-200.000.
Tom Swift Enterprises, Inc.: *See*—
Reitz, Ronald P., 4,126,149, Cl. 136-89.0AA.
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Peteretti, Raymond H., 4,126,351, Cl. 296-100.000.
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Higgins, Robert D.; and Schwehr, Richard A., 4,126,209, Cl. 187-1.00R.
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Huntt, Robert L., 4,126,723, Cl. 428-357.000.
Traubel, Harro; and Heinze, Helga, to Bayer Aktiengesellschaft. Tanning with carboxylic acid carrying ester, urethane and/or amide group. 4,126,413, Cl. 8-94.260.
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Uhlig, David B. Modular support. 4,126,289, Cl. 248-188.100.
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Uniloc, Inc.: *See*—
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Union Carbide Corporation: *See*—
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Montgomery, Lionel C.; Fenish, Robert G.; and Mandorf, Victor, Jr., 4,126,654, Cl. 264-63.000.
Roberge, Raymond P., 4,126,430, Cl. 55-20.000.
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Longhurst, David W.; and Weston, Martin A., 4,126,865, Cl. 343-766.000.
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Simonaire, Fred M., 4,126,862, Cl. 343-18.00E.
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Kah, Carl L. C., Jr., 4,126,271, Cl. 239-397.500.
University of Kentucky Research Foundation: *See*—
Wells, Larry G., 4,126,234, Cl. 214-1.0HH.
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Vail, Dottie J.; and Getches, Nancy. Invalid transfer lift. 4,125,908, Cl. 5-86.000.
Vaill, Ronald E., to Westinghouse Electric Corp. Compressive bumper assembly. 4,126,344, Cl. 293-4.000.
Valade, Edmond J., to Win, Inc. Fork for barbecuing and open fire cooking. 4,126,086, Cl. 99-419.000.
Valentine, James M., to Valentine Match Plate Company. Production of plaster molds by microwave treatment. 4,126,651, Cl. 264-25.000.
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Vandenberk, Jan; Kennis, Ludo E. J.; Van der Aa, Marcel J. M. C.; and Van Heertum, Albert H. M. Th., to Janssen Pharmaceutica N.V. Antiemetic, 1-(benzimidazolyl-alkyl)-piperidine derivatives. 4,126,687, Cl. 424-267.000.
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Verschuur, Eke, to Shell Oil Company. Agglomerating coal slurry particles. 4,126,426, Cl. 44-24.000.
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Vitt, Josef, to Braas & Co., GmbH. Sealing sheeting. 4,126,721, Cl. 428-339.000.

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Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,570, Cl. 252-89.00R.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,126,571, Cl. 252-108.000.

Vogel, Wolfgang, to Webasto-Werk W. Baier GmbH & Co. Sunroof. 4,126,352, Cl. 296-137.00B.

Vogl, Thomas M.; and Roberts, Evelyn L. X-ray phantom. 4,126,789, Cl. 250-505.000.

Voight, Larry A. Clothes hanger adapter. 4,126,253, Cl. 223-98.000.

Vojta, Karel: *See—*
Bernatt, Joseph; and Vojta, Karel, 4,126,773, Cl. 200-146.00R.

von Allworden, Wilhelm; and Geisthoff, Hubert, to Jean Walterscheid GmbH. Adjustable length upper guide member. 4,126,057, Cl. 74-586.000.

von Basse, Paul-Werner; and Hofmann, Rudiger, to Siemens Aktiengesellschaft. Semiconductor memory. 4,126,881, Cl. 357-55.000.

von Braitenberg, Meinhard: *See—*
Hartmann, Klaus; and von Braitenberg, Meinhard, 4,126,396, Cl. 356-434.000.

Vonco Products, Inc.: *See—*
Laske, Louis L., 4,125,985, Cl. 53-452.000.

Voss, Hans-Hermann, to Armaturenfabrik Hermann Voss. Hose and pipe coupling. 4,126,335, Cl. 285-39.000.

Vredestein N.V.: *See—*
Roest, Jan I. R., 4,126,157, Cl. 138-109.000.

W. R. Grace & Co.: *See—*
Flaherty, Theodore V., Jr.; Nozemack, Richard J.; and Guidry, Hanson L., 4,126,579, Cl. 252-455.00Z.

W. S. Dickey Clay Mfg. Co.: *See—*
Thompson, Ernest R., 4,126,339, Cl. 285-369.000.

W. Schlafhorst & Co.: *See—*
Stahlecker, Fritz; Kamp, Heinz; and Raasch, Hans, 4,125,990, Cl. 57-263.000.

Wachi, Shigeaki: *See—*
Suzuki, Tadao; and Wachi, Shigeaki, 4,126,891, Cl. 363-26.000.

Wacker-Chemie GmbH: *See—*
Muller, Horst; Schmidt, Edgar; Frey, Volker; and Riedle, Rudolf, 4,126,630, Cl. 260-448.20E.

Waggoner, Donald L. R. Edging device. 4,125,964, Cl. 47-33.000.

Wagner Folding Box Corporation: *See—*
Cohen, Manuel, 4,126,264, Cl. 229-27.000.

Wagoner, Lewis R. Bullet trap. 4,126,311, Cl. 273-102.400.

Wagor, John C.; and Bradley, Robert W., to Kwik-Way Manufacturing Company. Brake lathe harmonic damper. 4,126,066, Cl. 82-4.00A.

Wahlstrom, Sven E. Electrostatic generator and motor. 4,126,822, Cl. 322-2.00A.

Wait, Donald M.: *See—*
Johnson, Joseph D.; Viale, Hector E.; and Wait, Donald M., 4,126,709, Cl. 426-540.000.

Wakaizumi, Kiyoaki; Matsunaga, Toshiki; and Mino, Yuji, to Mitsubishi Keikinzoku Kogyo Kabushiki Kaisha. Method of controlling feed of alumina to an aluminum electrolytic cell. 4,126,525, Cl. 204-67.000.

Wakayama Iron Works, Ltd.: *See—*
Okazaki, Narukazu; and Azuma, Hiroshi, 4,125,921, Cl. 26-3.000.

Wakefield, Gene F., to Texas Instruments Incorporated. Spherical light emitting diode element and character display with integral reflector. 4,126,812, Cl. 313-500.000.

Wald, Milton M.: *See—*
Kim, Leo; and Wald, Milton M., 4,126,642, Cl. 260-673.000.
Paxson, Timm E.; and Wald, Milton M., 4,126,643, Cl. 260-673.000.

Walker, John H.; and Sutton, James A., to Dowty Mining Equipment Limited. Mine roof support. 4,126,002, Cl. 405-296.000.

Walker, Raymond W., to Deep Oil Technology, Inc. Offshore well apparatus with a protected production system. 4,126,183, Cl. 166-338.000.

Wallace, Trevor E., to Steel Engineering Company Limited, The. Hydraulic percussive machines. 4,126,192, Cl. 173-105.000.

Waller, George W., to Green, James W. Method and apparatus for supporting pipe in filled dirt. 4,126,012, Cl. 405-157.000.

Walrath, George A.; and Keating, John T., to Schenectady Chemicals, Inc. Solutions of polyvinyl acetals. 4,126,597, Cl. 260-33.20R.

Walter, Ulrich, to Siemens Aktiengesellschaft. High temperature thermistors (NTC). 4,126,583, Cl. 252-521.000.

Walters, Gary. Battery insulator apparatus. 4,126,734, Cl. 429-71.000.

Walters, Robert A.; and Kolenik, Steve A., to ARCO Medical Products Company. Method and means for receiving parameter control data in an implantable heart pacer. 4,126,139, Cl. 128-419.0PG.

Ward, Bruce K., to Diversified Insulation, Inc. Vent and baffle. 4,125,971, Cl. 52-92.000.

Ward, Bruce K. Floor joist insulation baffle. 4,125,982, Cl. 52-404.000.

Wareham, Richard R., to Polaroid Corporation. Dual film camera. 4,126,875, Cl. 354-86.000.

Warman, Thomas E.: *See—*
Martin, Charles R.; Kramer, Francis J.; and Warman, Thomas E., 4,126,258, Cl. 227-8.000.

Warner-Lambert Company: *See—*
Goel, Om P.; and Pearlman, William M., 4,126,637, Cl. 562-421.000.
Isen, Allan A., 4,126,138, Cl. 351-160.00R.

Warren, William H. Egg washing machine. 4,125,914, Cl. 15-3.130.

Wasserman, Arnold S. Foldable garment support frame. 4,126,252, Cl. 223-87.000.

Watanabe, Yuichi: *See—*
Nagao, Shozo; O'Hashi, Yoshinobu; and Watanabe, Yuichi, 4,126,337, Cl. 285-231.000.

Watanabe, Yutaka: *See—*
Nakagawa, Taizo; Suzuki, Toshiyuki; Watanabe, Yutaka; Ohmori, Kaoru; Tejima, Iwao; Yamada, Osamu; and Ishida, Shuichi, 4,126,696, Cl. 424-300.000.

Watson, George R., to Norton Company. Co-fused alumina-zirconia alloy abrasive containing magnesium oxide. 4,126,429, Cl. 51-309.00R.

Watson, Robert E.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,126,898, Cl. 364-900.000.

Watts Regulator Co.: *See—*
Smith, Michael E.; and Brown, Robert G., 4,126,023, Cl. 70-177.000.

Weaver, Lelland A. C.: *See—*
Hundstad, Richard L.; and Weaver, Lelland A. C., 4,126,833, Cl. 331-94.5PE.

Webasto-Werk W. Baier GmbH & Co.: *See—*
Vogel, Wolfgang, 4,126,352, Cl. 296-137.00B.

Wedding, Donald K.; Fein, Michael E.; Ernsthausen, Roger E.; and Byrum, Bernard W., Jr., to Owens-Illinois, Inc. Gas discharge display device containing source of lanthanum series material in dielectric layer of envelope structure. 4,126,807, Cl. 313-188.000.

Wedding, Donald K.; Ernsthausen, Roger E.; Byrum, Bernard W., Jr.; and Fein, Michael E., to Owens-Illinois, Inc. Gas discharge display panel with lanthanide or actinide family oxide. 4,126,809, Cl. 313-221.000.

Weeks, Paul D.: *See—*
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,126,624, Cl. 260-345.90R.

Weemaes, Freddy W. G.; and Carruet, Valere J. M., to International Standard Electric Corporation. Data processing system with monitoring and regulation of processor free time. 4,126,895, Cl. 364-200.000.

Wegemund, Bernd: *See—*
Gruber, Werner; Galinke, Joachim; and Wegemund, Bernd, 4,126,737, Cl. 526-270.000.

Weidenfeller, Gordon J.: *See—*
Pierson, Fred W., Sr.; Pierson, Fred W., Jr.; and Weidenfeller, Gordon J., 4,125,931, Cl. 29-455.00R.

Weiland, George G. Toilet ventilating apparatus. 4,125,906, Cl. 4-217.000.

Weisberg, Alfred M.: *See—*
Hradil, Edward; Hradil, Hana; and Weisberg, Alfred M., 4,126,524, Cl. 204-44.000.

Weiss, Stefan, to Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft. Stabilized cyanamide solutions. 4,126,664, Cl. 423-265.000.

Wells, Larry G., to University of Kentucky Research Foundation. Large cylindrical bale transporter. 4,126,234, Cl. 214-1.0HH.

Welstead, William J., Jr.; and Moran, Henry W., to A. H. Robins Company, Incorporated. 2-Amino-3-(5- and 6-)benzoylphenylacetic acids, esters and metal salts thereof. 4,126,635, Cl. 562-441.000.

Weman, Per O., to Klippan GmbH Hamburg. Inflatable air bag for motor vehicles for attenuating the impact effect of the passenger in case of accident. 4,126,325, Cl. 280-738.000.

Wenninger, Freddie W.: *See—*
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Werlich, Harald W.: *See—*
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West, John M.: *See—*
Bevilacqua, Frank; Dietrich, Joseph R.; Flinn, William S.; Groves, Malcolm D.; and West, John M., 4,126,767, Cl. 176-36.00R.

Westelaken, Christianus M. T., to Westlake Agricultural Engineering, Inc. Multiple stage grain dryer with intermediate steeping. 4,125,945, Cl. 34-65.000.

Westinghouse Electric Corp.: *See—*
Brown, Philip S.; and Harman, Douglas G., 4,125,937, Cl. 29-727.000.
Carr, Walter J., Jr.; and Deis, Daniel W., 4,126,798, Cl. 310-204.000.
El Taher, Mohamed A.; and Bertovich, Matthew G., 4,126,218, Cl. 198-325.000.
Etkins, Robert, 4,126,847, Cl. 340-5.00R.
Fuller, Robert R., 4,126,420, Cl. 422-162.000.
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Hundstad, Richard L.; and Weaver, Lelland A. C., 4,126,833, Cl. 331-94.5PE.
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Orawiec, Thomas M., 4,126,232, Cl. 212-11.000.
Sampson, Ronald N.; and McCaskey, Harold O., 4,126,481, Cl. 106-191.000.
Smith, Andrew W., Jr.; and Kratz, Kenneth S., 4,126,027, Cl. 72-11.000.
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Weston, Martin A.: *See—*
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Westvaco Corporation: *See—*
Alford, John A.; and Osborne, Michael W., 4,126,604, Cl. 260-97.500.

Weyant, Romer G. Method of making door. 4,125,925, Cl. 29-155.00R.

Whale Enterprises, Inc.: *See—*
Killian, Henry E., 4,125,956, Cl. 43-11.000.

Wheel Service Co., Inc.: *See—*
Nelson, Eldrid W.; and Auth, Thomas L., 4,126,349, Cl. 296-24.00R.

White, Alan C.; and Sugden, Robert F., to John Wyeth & Brother Limited. Fused ring indole derivatives and antidepressant compositions containing them. 4,126,683, Cl. 424-251.000.

Wiener, Alan I., to Raytheon Company. Display range marker. 4,126,858, Cl. 343-5.0EM.

Willard, John W., Sr., to Caw Industries, Inc. Method of rooting cuttings. 4,126,441, Cl. 71-77.000.

Willbond, William F.: *See—*
Tutt, Kingsley J.; Willbond, William F.; and Davies, John, 4,126,020, Cl. 69-6.500.

Willenbacher, Erich, to Pfaff Industriemaschinen GmbH. Sewing machine having a guiding device for the production of edge-parallel seams. 4,126,097, Cl. 112-153.000.

Williams, Brown F.: *See—*
Bell, Alan E.; Williams, Brown F.; and Carlson, David E., 4,126,150, Cl. 136-89.0TF.

Williams, Joseph J.: *See—*
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Williams, Paul D., to Varian Associates, Inc. Method of making cathode heaters. 4,126,489, Cl. 148-6.300.

Willis, Donald H., to RCA Corporation. High voltage protection circuit. 4,126,816, Cl. 315-411.000.

Wilsing, Hans: *See—*
Lorenz, Gunter; Nogaj, Alfred; Miller, Helmut; and Wilsing, Hans, 4,126,603, Cl. 526-240.000.

Wilson, Robert G.: *See—*
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Win, Inc.: *See—*
Valade, Edmond J., 4,126,086, Cl. 99-419.000.

Winter, Max; Gautschi, Fritz; Flament, Ivon; and Stoll, Max, to Firmenich & Cie. Ethyl or acetyl derivatives of 2-pyridylmethanethiol. 4,126,618, Cl. 546-339.000.

Wippler, John: *See—*
Davis, Donald G.; Wippler, John; and Heitman, David L., 4,126,131, Cl. 128-142.400.

Wirt, James R.: *See—*
MacWilliams, Dalton C.; and Wirt, James R., 4,126,480, Cl. 106-100.000.

Wirt, Leon A., to Caterpillar Tractor Co. Tree harvester control linkage. 4,126,235, Cl. 214-3.000.

Wisbey, Raymond W.: *See—*
Bobo, Melvin; Heyser, James W.; Shotts, L. D.; and Wisbey, Raymond W., 4,126,405, Cl. 415-115.000.

Wise, John J.: *See—*
Caesar, Philip D.; Garwood, William E.; Peters, Alan W.; and Wise, John J., 4,126,644, Cl. 260-676.00R.

Wismer, Marco: *See—*
Schimmel, Karl F.; Claar, James A.; Seiner, Jerome A.; and Wismer, Marco, 4,126,596, Cl. 260-29.6NR.

Witte, Johan F.: *See—*
Thieme, Willem L.; and Witte, Johan F., 4,126,088, Cl. 100-45.000.

Witte, Joseph J.; and Femenias, Raymond H., to United States of America, Army. Pulse doppler ranging system (U). 4,126,861, Cl. 343-13.00R.

Witzky, Julius E., to Southwest Research Institute. Mixed cycle internal combustion engine. 4,126,106, Cl. 123-30.00D.

Wolert, Hartmut: *See—*
Moller, Klaus; Michel, Dierk; Wolert, Hartmut; and Ernst, Helmut, 4,126,411, Cl. 432-80.000.

Wolinski, Leon E.; and Berezuk, Peter D., to Pratt & Lambert, Inc. Adhesive compositions and method employing same. 4,126,504, Cl. 156-310.000.

Wolowski, Eckard; and Hameier, Martin, to Didier Engineering GmbH. Method for the preliminary treatment of crude gas from a thermic carbon refinement process. 4,126,431, Cl. 55-23.000.

Wolter, Dietrich: *See—*
Schneider, Waldemar; and Wolter, Dietrich, 4,126,605, Cl. 260-112.00B.

Wong, Jack Y., to Alumatec, Inc. Method and means for electrolytic precleaning of substrates and the electrodeposition of aluminum on said substrates. 4,126,523, Cl. 204-32.00R.

Wonn, James W., to Westinghouse Electric Corp. Method for detecting and locating defective nuclear reactor fuel elements. 4,126,514, Cl. 176-19.0LD.

Wood, George D., to Lever Brothers Company. Collapsible tubes. 4,126,249, Cl. 222-92.000.

Wright, John B.: *See—*
Hall, Charles M.; Johnson, Herbert G.; and Wright, John B., 4,126,617, Cl. 546-81.000.

Wright, Richard L.: *See—*
Koontz, Paul G.; Wright, Richard L.; and Cantu, Arthur M., 4,126,788, Cl. 250-481.000.

Wu, Sheng H. Light-condensing instrument. 4,126,379, Cl. 350-260.000.

Wurm, Jorg, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for deoxidation of refractory metals. 4,126,493, Cl. 148-20.000.

Wyatt, William B., to Aladdin Industries, Incorporated. Heated food service system. 4,126,775, Cl. 219-400.000.

Wylie, M. Lynn, to Lilliston Corporation. Twin row cultivator. 4,126,190, Cl. 172-624.000.

Xerox Corporation: *See—*
Brown, Robert W., 4,126,566, Cl. 252-62.10P.
Chiang, Anne, 4,126,528, Cl. 204-180.00R.
Ciuffini, Anthony J., 4,126,457, Cl. 96-1.50R.
Creatura, John A.; and Mincer, Joseph L., 4,126,458, Cl. 96-1.0SD.
Cronshaw, David; Turner, William D.; and Shemer, Jack E., 4,126,893, Cl. 364-200.000.
Cronshaw, David; Keddy, James R.; Shemer, Jack E.; and Turner, William D., 4,126,894, Cl. 364-200.000.
Jones, Lewis O., 4,126,454, Cl. 96-15.00D.
Lenhard, Myron J.; and Rees, James D., 4,126,565, Cl. 252-62.10P.
Lindblad, Nero R.; Johnson, Gordon E.; and Sharp, James H., 4,126,455, Cl. 96-1.0SD.
Luzio, Guillermo F., 4,126,817, Cl. 318-7.000.
Marlow, Richard Z., 4,126,711, Cl. 427-15.000.
Murphy, Richard J., 4,126,722, Cl. 428-339.000.
O'Horo, Michael P., 4,126,437, Cl. 65-21.000.
Sheridon, Nicholas K., 4,126,854, Cl. 340-373.000.
Thornburg, David D.; and Lahr, Roy J., 4,126,824, Cl. 324-62.000.

Yajima, Seishi; Kayano, Hideo; and Toma, Hideo, to Research Institute for Iron, Steel and Other Metals of the Tohoku University, The. Hydrogen-occluding alloy. 4,126,242, Cl. 220-83.000.

Yamabe, Masaaki: *See—*
Ukihashi, Hiroshi; Asawa, Tatsuro; Yamabe, Masaaki; Gunjima, Tomoki; and Miyake, Haruhisa, 4,126,588, Cl. 521-31.000.

Yamada, Osamu: *See—*
Nakagawa, Taizo; Suzuki, Toshiyuki; Watanabe, Yutaka; Ohmori, Kaoru; Tejima, Iwao; Yamada, Osamu; and Ishida, Shuichi, 4,126,696, Cl. 424-300.000.

Yamada, Tsuyoshi: *See—*
Sumikama, Sadao; Nakamura, Shigeru; Shirato, Kozo; Hiraizumi, Kazuo; Takasu, Nobuo; Taguchi, Mitsuru; Yamada, Tsuyoshi; and Ishiguro, Susumu, 4,126,393, Cl. 356-130.000.

Yamaguchi, Akihide: *See—*
Akado, Hajime; Yamaguchi, Akihide; and Uchida, Yoshiro, 4,126,109, Cl. 123-122.00D.

Yamakoshi, Yasumichi: *See—*
Hamada, Masato; Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; and Yamamoto, Fumihiko, 4,126,589, Cl. 521-31.000.

Yamamoto, Fumihiko: *See—*
Hamada, Masato; Seko, Maomi; Yamakoshi, Yasumichi; Miyauchi, Hirotsugu; and Yamamoto, Fumihiko, 4,126,589, Cl. 521-31.000.

Yamamoto, Kousuke; and Takenaka, Shinji, to Mitsui Toatsu Chemi-

cals, Incorporated. Process for preparing stable anhydrous sodium dithionite. 4,126,716, Cl. 427-215.000.

Yamamoto, Shunji, to Minolta Camera Kabushiki Kaisha. Excess developing solution removing apparatus. 4,126,101, Cl. 118-661.000.

Yamamoto, Yasushi: *See*—
Kamata, Kazuo; and Yamamoto, Yasushi, 4,126,071, Cl. 84-1.030.

Yamanoi, Hiroshi; and Kitamura, Tomosaburo, to Sony Corporation. Surface acoustic wave apparatus. 4,126,839, Cl. 333-72.000.

Yamashina, Naoharu, to Popy Co., Ltd. Doll with moveable arms, legs and head. 4,125,961, Cl. 46-145.000.

Yamazaki, Isamu, to Tokyo Shibaura Electric Co., Ltd. Microprogrammed large-scale integration (LSI) microprocessor. 4,126,896, Cl. 364-200.000.

Yanagisawa, Hiroaki: *See*—
Nakao, Hideo; Yanagisawa, Hiroaki; Shimizu, Bunji; Kaneko, Masakatsu; Nagano, Mitsuo; and Sugawara, Shinichi, 4,126,745, Cl. 544-21.000.

Yanagisawa, Syozo; and Itoh, Tomo, to Hitachi, Ltd. Dashpot. 4,126,303, Cl. 267-34.000.

Yann, Carl C.: *See*—
Smith, Robert L.; and Yann, Carl C., 4,126,177, Cl. 165-91.000.

Yaroshevich, Nikolai M.: *See*—
Bello, Mark B.; Gittemeier, Jury P.; Komyak, Nikolai I.; Levitin, Anatoly I.; Stolin, Valery I.; Frumkin, Semen P.; Vijunnik, Viktor S.; Leites, Anatoly B.; Lyakhov, Jury V.; Novikov, Vladlen V.; Patsiansky, Felix A.; Semyanov, Alexandr I.; and Yaroshevich, Nikolai M., 4,126,226, Cl. 209-589.000.

Yasuda, Tsutomu: *See*—
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Yasutake, Masatoshi: *See*—
Ikeda, Mitsuru; Ikeda, Teppei; Teramoto, Yoshihiko; Yasutake, Masatoshi; and Nakamine, Yoshimi, 4,126,032, Cl. 73-15.00B.

Yazaki, Mutsunobu; Uchiyama, Takashi; Matsuda, Mutsuhide; Taguchi, Tetsuya; and Mashimo, Yukio, to Canon Kabushiki Kaisha. Aperture setting device for camera. 4,126,872, Cl. 354-33.000.

Yokota, Hideo: *See*—
Tamura, Shuichi; Hosoe, Kazuya; and Yokota, Hideo, 4,126,871, Cl. 354-25.000.

Yoshina, Shigetaka, deceased; by Yoshina, Teruko, legal heir; Kameyama, Tsutomu; Oiji, Yoshimasa; and Kiyohara, Akira, to Kyowa Hakko Kogyo Kabushiki Kaisha. Certain 5-substituted-3-methyl-2-benzofuran acetic acids. 4,126,625, Cl. 260-346.220.

Yoshina, Teruko, legal heir: *See*—
Yoshina, Shigetaka, deceased; Yoshina, Teruko, legal heir; Kameyama, Tsutomu; Oiji, Yoshimasa; and Kiyohara, Akira, 4,126,625, Cl. 260-346.220.

Young, Bernard L. Skeiner. 4,126,281, Cl. 242-53.000.

Younger, Harold R., Jr.: *See*—
Hollister, Robert H.; Crockett, Jerry W.; Younger, Harold R., Jr.; and Ricketts, Garland B., 4,126,844, Cl. 336-198.000.

Yung, Gordon H. K.: *See*—
Sibley, Murray J.; Yung, Gordon H. K.; and Urrea, Petronio D., 4,126,587, Cl. 252-541.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; and Hamada, Masa, 4,126,606, Cl. 260-112.50R.

Zaitseva, Nina E., administrator: *See*—
Ignashev, Evgeny P.; Konovalov, Evmeny G., deceased; Konovalov, Georgy E., administrator; and Zaitseva, Nina E., administrator, 4,126,031, Cl. 72-285.000.

Zamboni, Richard F., to Frank J. Zamboni & Co., Inc. Board brush for ice-resurfacing machine. 4,125,915, Cl. 15-21.00E.

Zdeb, Paul A. Machine shield. 4,126,081, Cl. 90-11.00R.

Zeller Plastik: *See*—
Brach, Ulrich, 4,126,240, Cl. 215-252.000.

Zellweger Uster Limited: *See*—
de Vries, Hans, 4,126,793, Cl. 307-129.000.

Zeuner, Kenneth W.; and Jarman, Alonzo B., to Control Concepts, Inc. Feathering valve assembiy. 4,126,293, Cl. 251-30.000.

Ziegler, William E.: *See*—
Rupert, Samuel J.; and Ziegler, William E., 4,126,658, Cl. 264-89.000.

Zimmerle, James R.; Randolph, Robert W.; and Rollins, Dallas W., to ACF Industries, Incorporated. Combination hatch cover having supplemental locking arrangement. 4,126,094, Cl. 105-377.000.

Zimmerman, Franz X.: *See*—
Smith, Charles W., Jr.; and Zimmerman, Franz X., 4,126,757, Cl. 13-25.000.

Zimmerman, Terrence K.: *See*—
Capowski, Robert S.; Krygowski, Matthew A.; and Zimmerman, Terrence K., 4,126,897, Cl. 364-200.000.

Zollweg, Richard T.; and Eaton, Homer L., to Eaton-Leonard Corporation. Retractable pressure die. 4,126,030, Cl. 72-154.000.

Zuech, Ernest A.: *See*—
Hughes, William B.; and Zuech, Ernest A., 4,126,577, Cl. 252-431.00N.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF NOVEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Avantek, Inc.: *See—*
Seader, Leonard D.; and Sterrett, James E., Re. 29,844, Cl. 330-293.000.

Craford, Magnus G.: *See—*
Groves, Warren O.; Herzog, Arno H.; and Craford, Magnus G., Re. 29,845, Cl. 357-17.000.

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. NOTE.—First number, class; second number, subclass; third number, patent number

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121 R	4,126,063

CLASS 82

1 C	4,126,064
4 A	4,126,066
4 C	4,126,065
36 A	4,126,067

CLASS 83

151	Re.29,838
237	4,126,068
703	4,126,069

CLASS 84

1.01	4,126,070
1.03	4,126,071
173	4,126,072
293	4,126,073
313	4,126,074
421	4,126,075

CLASS 85

37	4,126,076

CLASS 89

1.704	4,126,077
7	4,126,078
190	4,126,079
199	4,126,080

CLASS 90

11 R	4,126,081

CLASS 91

41	4,126,082
176	4,126,083
443	4,126,084

CLASS 93

35 R	4,126,085

CLASS 96

1 E	4,126,456
1 SD	4,126,455
	4,126,458
1.5 R	4,126,457
15 D	4,126,454
29 R	4,126,459
35.1	4,126,460
50 R	4,126,461
56.5	4,126,462
67	4,126,463
73	4,126,464
76 C	4,126,465
84 UV	4,126,466
87 A	4,126,467
88	4,126,468
110	4,126,472

CLASS 99

327	4,126,087
419	4,126,086

CLASS 100

45	4,126,088
250	4,126,089

CLASS 101

348	4,126,090
365	4,126,091

CLASS 102

24 HC	4,126,092

CLASS 104

159	4,126,093

CLASS 105

377	4,126,094
475	4,126,095

CLASS 106

14.12	4,126,469
15 FP	4,126,473
39.7	4,126,476
	4,126,477
58	4,126,478
62	4,126,479
63	4,126,474
95	4,126,470
100	4,126,471
	4,126,480
118	4,126,475
191	4,126,481
274	4,126,482

CLASS 108

145	4,126,096

CLASS 112

153	4,126,097
158 B	4,126,098

CLASS 114

74 A	4,126,099

CLASS 118

658	4,126,100
661	4,126,101

CLASS 119

5	4,126,102
14.08	4,126,103
159	4,126,104

CLASS 122

214	4,126,105

CLASS 123

30 D	4,126,106
32 EH	4,126,107
41.14	4,126,108
122 D	4,126,109
	4,126,110
122 E	4,126,111
148 E	4,126,112
179 F	4,126,113
198 D	4,126,114
198 E	4,126,115

CLASS 126

9 R	4,126,116
44	4,126,117
121	4,126,118
124	4,126,119
215	4,126,120
270	4,126,121
271	4,126,122
	4,126,123

CLASS 128

1 R	4,126,124
2.06 E	4,126,126
2.1 B	4,126,125
11	4,126,127
24.3	4,126,128
67	4,126,129
91 R	4,126,130
142.4	4,126,131
214 F	4,126,132
214.4	4,126,133
235	4,126,134
275	4,126,135
303.1	4,126,136
303.14	4,126,137
419 PG	4,126,139

CLASS 131

8 R	4,126,140
9	4,126,141

CLASS 132

7	4,126,142
11 A	4,126,143
73	4,126,144
83 R	4,126,145

CLASS 133

3 A	4,126,146
5 R	4,126,147

CLASS 134

3	4,126,483
34	4,126,484
46	4,126,485
135	4,126,148

CLASS 136

89 AA	4,126,149
89 TF	4,126,150

CLASS 137

43	4,126,151
85	4,126,152
353	4,126,153
625.69	4,126,154
	4,126,155
810	4,126,156

CLASS 138

109	4,126,157

CLASS 139

384 B	4,126,158
449	4,126,159

CLASS 141

91	4,126,160
95	4,126,161
98	4,126,162
269	4,126,163
286	4,126,164

CLASS 142

56	4,126,165

CLASS 148

2	4,126,486
	4,126,487
6	4,126,488
6.21	4,126,490
6.3	4,126,489
9.5	4,126,491
12 E	4,126,492
20	4,126,493
31.57	4,126,494
32	4,126,495
187	4,126,496

CLASS 149

100	4,126,497

CLASS 150

1.5 R	4,126,166
8	4,126,167
35	4,126,168
54 B	4,126,169

CLASS 151

7	4,126,170

CLASS 156

86	4,126,498
148	4,126,499
154	4,126,500
183	4,126,501
184	4,126,502
	4,126,503
310	4,126,504
330	4,126,505
396	4,126,506
415	4,126,507
512	4,126,508
605	4,126,509
626	4,126,510
660	4,126,511

CLASS 157

13	4,126,171

CLASS 160

126	4,126,172
229 R	4,126,173
266	4,126,174

CLASS 162

171	4,126,512
380	4,126,513

CLASS 164

147	4,126,175
160	4,126,176

CLASS 165

91	4,126,177
165	4,126,178

CLASS 166

64	4,126,179
261	4,126,180
280	4,126,181
314	4,126,182
338	4,126,183

CLASS 169

56	4,126,184

CLASS 172

59	4,126,185
169	4,126,186
311	4,126,187
370	4,126,188
456	4,126,189
624	4,126,190

CLASS 173

1	4,126,191
105	4,126,192

CLASS 174

52 FP	4,126,758
94 R	4,126,759

CLASS 175

171 4,126,193
340 4,126,194
364 4,126,195

CLASS 176

19 LD 4,126,514
36 R 4,126,767
87 4,126,515

CLASS 177

121 4,126,196
145 4,126,197

CLASS 178

18 4,126,760

CLASS 179

1.5 R 4,126,761
2 A 4,126,762
6 E 4,126,763
15 BA 4,126,764
18 AH 4,126,765
18 BC 4,126,766
90 B 4,126,768
115 A 4,126,769
170.2 4,126,770

CLASS 180

6.3 4,126,198
54 A 4,126,199
66 R 4,126,200
70 R 4,126,201
89.12 4,126,202

CLASS 181

109 4,126,203
156 4,126,204
256 4,126,205

CLASS 182

129 4,126,206

CLASS 184

1 C 4,126,207

CLASS 187

1 R 4,126,208
4,126,209
4,126,210

CLASS 188

32 4,126,211
317 4,126,212

CLASS 190

18 A 4,126,213

CLASS 192

36 4,126,214
84 C 4,126,215
89 B 4,126,216

CLASS 194

93 4,126,217

CLASS 195

103.5 R 4,126,516
109 4,126,517

CLASS 198

325 4,126,218
382 4,126,219

CLASS 200

61.25 4,126,772
146 R 4,126,773
314 4,126,774

CLASS 201

27 4,126,518
32 4,126,519

CLASS 202

248 4,126,520

CLASS 204

15 4,126,521
28 4,126,522
32 R 4,126,523
44 4,126,524
67 4,126,525
98 4,126,526
159.22 4,126,527
180 P 4,126,529
180 R 4,126,528
192 EC 4,126,530
195 P 4,126,531
195 S 4,126,532
224 R 4,126,533
266 4,126,534
296 4,126,535
4,126,536
302 4,126,537

CLASS 206

45.14 4,126,220
63.3 4,126,221
326 4,126,222
445 4,126,223
540 4,126,224
607 4,126,225

CLASS 208

80 4,126,538
108 4,126,539
146 4,126,540

CLASS 209

240 4,126,541
258 4,126,542
263 4,126,543
536 Re.29,839
589 4,126,226
611 4,126,227

CLASS 210

11 4,126,544
14 4,126,545
19 4,126,546
4,126,547
33 4,126,548
58 4,126,549
60 4,126,550
83 4,126,551
4,126,552
130 4,126,553
198 C 4,126,554
238 4,126,555
242 AS 4,126,556
249 4,126,557
429 4,126,558
445 4,126,559
489 4,126,560

CLASS 211

5 4,126,228
40 4,126,229
50 4,126,230
99 4,126,231

CLASS 212

11 4,126,232

CLASS 214

1 BB 4,126,233
1 HH 4,126,234
3 4,126,235
10 4,126,236
674 4,126,237

CLASS 215

1 C 4,126,238
6 4,126,239
252 4,126,240

CLASS 219

10.55 M 4,126,776
4,126,777
400 4,126,775
461 4,126,778

CLASS 220

1 T 4,126,241
83 4,126,242
224 4,126,243
268 4,126,244
279 4,126,245
304 4,126,246

CLASS 221

2 4,126,247
241 4,126,248

CLASS 222

92 4,126,249
242 4,126,250
326 4,126,251

CLASS 223

87 4,126,252
98 4,126,253

CLASS 224

42.03 B Re.29,840
45 S 4,126,254
4,126,255
4,126,256

CLASS 226

76 4,126,257

CLASS 227

8 4,126,258
30 4,126,259
132 4,126,260

CLASS 229

15 4,126,261
17 G 4,126,262
17 R 4,126,263
27 4,126,264
32 4,126,265
39 R 4,126,266

CLASS 232

4 R 4,126,267
175.3 R 4,126,771

CLASS 235

432 4,126,779
458 4,126,780

CLASS 236

38 4,126,268
49 4,126,269

CLASS 237

1 A 4,126,270

CLASS 239

397.5 4,126,271
455 4,126,272
579 4,126,273
664 4,126,274

CLASS 241

1 4,126,275
14 4,126,673
16 4,126,276
4,126,277
4,126,278
275 4,126,280

CLASS 242

18 DD 4,126,279
53 4,126,281
107 4,126,282
199 4,126,283
201 4,126,284
222 4,126,285
4,126,286

CLASS 245

8 4,126,287

CLASS 248

188.1 4,126,288
4,126,289
226.1 4,126,290

CLASS 249

63 4,126,291
110 4,126,292

CLASS 250

281 4,126,781
305 4,126,782
336 4,126,783
421 4,126,784
445 T 4,126,785
4,126,786
4,126,787
481 4,126,788
505 4,126,789
564 4,126,790

CLASS 251

30 4,126,293
99 4,126,294
315 4,126,295
363 4,126,296

CLASS 252

8.6 4,126,561
8.8 4,126,562
4,126,563
8.9 4,126,564
62.1 P 4,126,565
4,126,566
62.54 4,126,567
63.2 4,126,568
89 R 4,126,569
4,126,570
4,126,572
99 4,126,573
108 4,126,571
179 4,126,574
408 4,126,575
429 B 4,126,576
431 N 4,126,577
440 4,126,578
455 Z 4,126,579
462 4,126,580
463 4,126,581
476 4,126,582
518 4,126,584
521 4,126,583
522 4,126,585
524 4,126,586
541 4,126,587

CLASS 254

131 4,126,297
172 4,126,298
186 R 4,126,299

CLASS 260

8 Re.29,842
22 A 4,126,591
22 M 4,126,592
23 R 4,126,593
29.4 UA 4,126,594
4,126,595
29.6 NR 4,126,596
33.2 R 4,126,597
37 EP 4,126,598
40 R 4,126,602
42.13 4,126,599
42.18 4,126,600
42.27 4,126,601
97.5 4,126,604
112 B 4,126,605
112.5 R 4,126,606
119 4,126,607
143 4,126,608
153 4,126,609
205 4,126,610
239 B 4,126,611
4,126,612
4,126,613
239.3 R 4,126,614
326 C 4,126,619
326.25 4,126,620
329 AM 4,126,621
340.3 4,126,622
340.5 R 4,126,623
345.9 R 4,126,624
346.22 4,126,625
378 4,126,626
399 4,126,627
404.5 4,126,628
405 4,126,629
448.2 E 4,126,630
456 F 4,126,631
465.8 D 4,126,632
501.12 4,126,633
559 AT 4,126,639
583 P 4,126,640
586 C 4,126,641
673 4,126,642
4,126,643
676 R 4,126,644
677 A 4,126,645
860 4,126,646
878 R 4,126,647
4,126,648
897 B 4,126,649
980 4,126,650

CLASS 264

25 4,126,651
29.6 4,126,652
63 4,126,653
4,126,654
71 4,126,655
83 4,126,656
85 4,126,657
89 4,126,658
90 4,126,659
101 4,126,660
209 4,126,661
328 4,126,662

CLASS 266

158 4,126,300
280 4,126,301

CLASS 267

8 D 4,126,302
34 4,126,303

CLASS 269

73 4,126,304

CLASS 271

94 4,126,306
120 4,126,305

CLASS 272

62 4,126,307
64 4,126,308

CLASS 273

95 R 4,126,309
101.1 4,126,310
102.4 4,126,311
105.2 4,126,312
201 4,126,313
245 4,126,314
271 4,126,315

CLASS 277

1 4,126,316
9.5 4,126,317
11 4,126,318
113 4,126,321
152 4,126,319
4,126,320

CLASS 280

6.11 4,126,322
11.12 4,126,323
42 4,126,324
47.26 4,126,327
205 4,126,326
220 4,126,329
415 A 4,126,328
474 4,126,330
650 4,126,331
683 4,126,332
738 4,126,325

CLASS 281

3 R 4,126,333

CLASS 282

22 R 4,126,334

CLASS 285

39 4,126,335
136 4,126,336
231 4,126,337
330 4,126,338
369 4,126,339

CLASS 290

11 4,126,791

CLASS 292

1 4,126,340
201 4,126,341
269 4,126,342
341 4,126,343

CLASS 293

4 4,126,344

CLASS 294

1 CA 4,126,345
55 4,126,346
74 4,126,347
88 4,126,348

CLASS 296

24 R 4,126,349
28 C 4,126,350
100 4,126,351
137 B 4,126,352

CLASS 297

133 4,126,353
248 4,126,354
250 Re.29,841
258 4,126,355
386 4,126,356

CLASS 298

1 A 4,126,357

CLASS 300

21 4,126,358

CLASS 305

11 4,126,359

CLASS 307

112 4,126,792
129 4,126,793
221 D 4,126,794
293 4,126,795

CLASS 308

9 4,126,360
174 4,126,361
201 4,126,362

CLASS 310

40 MM 4,126,796
46 4,126,797
204 4,126,798
260 4,126,799
313 4,126,800
328 4,126,801
361 4,126,802

CLASS 312

21 4,126,363
140 4,126,364
140.4 4,126,365
252 4,126,366

CLASS 313

55 4,126,803
57 4,126,805
105 CM 4,126,804
155 4,126,806
188 4,126,807
198 4,126,808
221 4,126,809
318 4,126,810
453 4,126,811
500 4,126,812

CLASS 315

11 4,126,813
307 4,126,814
384 4,126,815
411 4,126,816

CLASS 318

7 4,126,817
46 4,126,818
468 4,126,820
696 4,126,821
810 4,126,819

CLASS 322

2 A 4,126,822

CLASS 324

0.5 E 4,126,823
62 4,126,824
96 4,126,825
127 4,126,826

CLASS 325

16 4,126,827
472 4,126,828

CLASS 330

110 4,126,829
277 4,126,830
293 Re.29,844

CLASS 331

8 4,126,831
94.5 C 4,126,832
94.5 G 4,126,890
94.5 PE 4,126,833

CLASS 332

7.51 4,126,834

CLASS 333

21 A 4,126,835
70 T 4,126,836
72 4,126,837
4,126,838
4,126,839
79 4,126,840

CLASS 335

154 4,126,841
213 4,126,842

CLASS 336

84 C 4,126,843
198 4,126,844

CLASS 337

408 4,126,845

CLASS 338

184 4,126,846

CLASS 339

29 B 4,126,367
91 R 4,126,368
113 R 4,126,369
143 R 4,126,370
144 T 4,126,371
177 E 4,126,372

CLASS 340

5 R 4,126,847
18 LD 4,126,848
19 R 4,126,849
28 4,126,850
324 AD 4,126,851
347 DA 4,126,852
4,126,853
373 4,126,854
381 4,126,855
529 4,126,856
620 4,126,857

CLASS 343

5 EM 4,126,858
5 LS 4,126,859
5 NA 4,126,860
13 R 4,126,861
18 E 4,126,862
702 4,126,863
704 4,126,864
766 4,126,865
909 4,126,866

CLASS 346

140 R 4,126,867
4,126,868
165 4,126,869

CLASS 350

3.61 4,126,373
47 4,126,374
58 4,126,375
90 4,126,376
184 4,126,377
214 4,126,378
260 4,126,379
266 4,126,380
294 4,126,381
331 4,126,382
338 4,126,383
345 4,126,384
358 4,126,385

CLASS 351

160 R 4,126,138

CLASS 352

105 4,126,386

CLASS 353

77 4,126,387

CLASS 354

25 4,126,870
4,126,871

33 4,126,872
51 4,126,873
60 R 4,126,874
86 4,126,875
112 4,126,876
149 4,126,877
296 4,126,878

CLASS 355

1 4,126,388
13 4,126,389
14 4,126,390
27 4,126,391

CLASS 356

28.5 4,126,392
130 4,126,393
152 4,126,394
375 4,126,395
434 4,126,396

CLASS 357

17 Re.29,845
54 4,126,880
55 4,126,881
74 4,126,882
82 4,126,879
4,126,883

CLASS 358

21 4,126,884

CLASS 360

2 4,126,885
37 4,126,886
49 4,126,887
85 4,126,888

CLASS 361

92 4,126,889

CLASS 363

26 4,126,891
35 4,126,892

CLASS 364

200 4,126,893
4,126,894
4,126,895
4,126,896
4,126,897
900 4,126,898

CLASS 365

120 4,126,901
182 4,126,899
185 4,126,900

CLASS 366

7 4,126,397
76 4,126,398
159 4,126,399

CLASS 400

144.2 4,126,400

CLASS 401

42 4,126,401

CLASS 402

53 4,126,402

CLASS 403

2 4,126,403

CLASS 404

4 4,126,404

CLASS 405

157 4,126,012
169 4,126,013
196 4,126,011
202 4,126,010
207 4,126,008
220 4,126,006
259 4,126,004
260 4,126,009
261 4,126,003
4,126,005
271 4,126,007
287 4,126,001
296 4,126,002

CLASS 415

115 4,126,405

CLASS 417

373 4,126,406

CLASS 422

56 4,126,417
64 4,126,418
109 4,126,419
162 4,126,420
177 4,126,421

CLASS 423

63 4,126,663
265 4,126,664
314 4,126,665
561 A 4,126,666
580 4,126,667
657 4,126,668

CLASS 424

1 4,126,669
9 4,126,670
12 4,126,671
22 4,126,672
31 4,126,674
61 4,126,675
66 4,126,679
80 4,126,680
98 4,126,676
200 4,126,677
217 4,126,678
234 4,126,681
246 4,126,682
251 4,126,683
254 4,126,684
258 4,126,685
267 4,126,686
4,126,687
4,126,688
4,126,689
273 P 4,126,690
274 4,126,691
275 4,126,692
282 4,126,693
283 4,126,694
4,126,695
300 4,126,696
305 4,126,697
4,126,698
4,126,699
319 4,126,700
329 4,126,701
365 4,126,702

CLASS 425

63 4,126,407

CLASS 426

2 4,126,703
304 4,126,704
314 4,126,705
438 4,126,706
462 4,126,707
535 Re.29,843
4,126,708
540 4,126,709
589 4,126,710

CLASS 427

15 4,126,711
41 4,126,712
88 4,126,713
127 4,126,714
141 4,126,715
215 4,126,716
220 4,126,717
286 4,126,718

CLASS 428

35 4,126,719
105 4,126,724
110 4,126,725
163 4,126,726
172 4,126,727
204 4,126,728
294 4,126,720
339 4,126,721
4,126,722
357 4,126,723
389 4,126,729
412 4,126,730
446 4,126,731
539 4,126,732

CLASS 429

12 4,126,733
71 4,126,734
91 4,126,735

CLASS 431

2 4,126,408
265 4,126,410
359 4,126,409

CLASS 432

80 4,126,411

CLASS 520

166 4,126,747

CLASS 521

31 4,126,588
4,126,589
89 4,126,590

CLASS 526

173 4,126,736
240 4,126,603
270 4,126,737
271 4,126,738
272 4,126,739

CLASS 528

29 4,126,740
57 4,126,741
4,126,742
503 4,126,743

CLASS 542

426 4,126,744
449 4,126,615

CLASS 544

21 4,126,745
219 4,126,746

CLASS 546

75 4,126,616
81 4,126,617
339 4,126,618

CLASS 560

53 4,126,754
77 4,126,755
121 4,126,753
239 4,126,748

CLASS 562

421 4,126,637
441 4,126,635
472 4,126,636
487 4,126,638
507 4,126,634

CLASS 568

804 4,126,749
4,126,750
879 4,126,751
4,126,756
902 4,126,752

CLASSIFICATION OF DESIGNS

D2— 247 250,296
293 250,297
378.2 250,298
409 250,299
D6— 4 250,300
24 250,301
26 250,302
28 250,303
63 250,304
86 250,305
113 250,306
133 250,307
146 250,308
150 250,309
159 250,310
160 250,311
177 250,312
250,313
D7— 6 250,314
38 250,315
41 250,316
108 250,317
128 250,318
D9— 67 250,319
250,320
250,321
192 250,322
D11— 83 250,323
139 250,324
D12— 29 250,325
34 250,326
250,327
93 250,328
126 250,329
156 250,330
250,331
187 250,332
D14— 17 250,333
250,334
43 250,335
44 250,336
D15— 17 250,337
78 250,338
108 250,339
146 250,340
D16— 59 250,341
D19— 26 250,342
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